INVESTIGATION OF THE RELATIONSHIPS AMONG ONLINE COMMUNITY COLLEGE STUDENTS' CHARACTERISTICS AND INSTRUCTIONAL DELIVERY MODEL PREFERENCES

by

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ABSTRACT

MARIA EDELMIRA LANDER. Investigation of the relationships among online community college students' characteristics and instructional delivery model preferences. (Under the direction of DR. JOHN A. GRETES)

The purpose of this study was to examine the relationships between age, gender, program of study, and number of online courses previously taken and instructional delivery preferences related to students' control of their own learning, interaction, social presence, learning environment, and online self-efficacy. A web-based online survey was used to measure these five online preferences. Three hundred-eighty-two online students in a large community college completed all the questions on the online survey. Preference measures were calculated by using the mean score of all the survey items aligned to each online student instructional delivery preference, which were used as dependent variables in five multiple regressions with age, gender, field of study, and previous experience as the independent variables.

Results suggested a statistically significant relationship between online students with previous online experience and individual learning preferences, social presence preferences, environmental preferences, and online self-efficacy. In addition, the researcher found a significant relationship between program of study and online students' individual preferences, interactive learning preferences, social presence preferences, and environmental preferences. Online students in health programs tend to have higher scores in individual preferences, while math and science, engineering and computer science online students tend to have lower scores in interactive learning preferences, social presence preferences, and environmental preferences compared to humanities, social science, and education online students. Age and gender were found to be associated only

to social presence preferences. For each preference, the amount of variance accounted by age, gender, field of study, and previous experience was small. It ranged from 3.8% to 12.9%.

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"The real voyage of discovery consists not in seeking new lands, but in seeing with new eyes." Marcel Proust, French novelist

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CHAPTER 1: INTRODUCTION

Over the past ten years, the number of online courses offered by universities and community colleges has grown exponentially. In 2006, nearly 3.5 million students at degree-granting institutions were taking at least one course with at least 80% of its content delivered online (2007). The largest provider of these courses, The University of Phoenix, had 111,307 students enrolled in classes for the fall semester of 2005, and five other universities each had enrollments of over 50,000 students (Digest of Education Statistics, 2007). Community colleges have also experienced high growth rates and they account for over 50% of all online enrollments in the past five years (Allen & Seaman, 2007). While the number of courses offered at universities and community colleges is growing, the students' perceptions of online courses are mixed. Students like the time flexibility of class participation and cost-effectiveness of online courses, but dislike the monotonous instructional methods and the course content design used in some online courses (Yang & Cornelious, 2004). With the number of students taking online courses increasing, it is likely that students' preferences will have an impact on the future landscape of online instruction (Allen & Seaman, 2005).

Researchers have identified a number of factors that account for some of the differences in how students learn. For example, Dunn, Dunn, and Price (1989) identified four groups of factors as affecting learning: environmental, sociological, emotional, and physical preferences. In addition, online students tend to be older (Allen & Seaman, 2006). The

constructivist learning model used by many as a guide for the design and delivery of online courses (Jonassen, 2002) emphasizes the role of adult learners in making decisions about their own learning. Knowles (2005) indicated that adults like to make their own decisions regarding learning content, pace of instruction, and how to learn.

Online learners' preferences for interaction was studied by Norstrop (2002) who investigated four types of interaction: content, conversation and collaboration, intrapersonal/metacognitive skills, and need for support. He concluded that students considered their interaction with the course content important to their online learning experience, that students relied on their peers and their instructors to form and maintain learning communities, that self-directedness and cognitive strategies built into the online course was important to the participants, and that support was a key to the students online success.

Walker and Fraser (2005) suggested that online instructors should look beyond student interaction and collaboration when designing courses. Online pedagogy must be personally relevant for students and must address the psychosocial influences of the online learning environment. This perspective is supported by Braun (2008), who also found that students perceived online courses to be more academically demanding and of equal quality to traditional classroom instruction.

Because online courses rely on computer systems to deliver instruction, other factors such as computer self-efficacy may affect students' preferences. For example, according to Torkzadeth, Koufteros, and Pflughoeft (2003) "computer self-efficacy not only determines decisions by individuals to accept and use the computer system, but is also a good predictor of achivement in computer-related tasks." (p. 264) Richardson and

Newby (2006) found significant differences in cognitive engagement based on students' age, gender, program of study, and prior experience with online courses.

Different generations demonstrate different learning styles and habits. For example, the Millennial Generation or Generation Y, which includes children and young adults born between 1982 and 2000, is the first generation to grow with computers and the internet. They have been using blogs, wikis, and social networking tools outside and inside the classroom for many years. The Millennial generation grew up with learning approaches that used teamwork and collaboration. They learned in classrooms with learning pods and subject corners and individualized options. In contrast, most Baby Boomers, older adults in their forties and fifties, used the internet for the first time as adults. They learned through lectures and printed text with few opportunities to get involved in hands-on activities (El-Shamy, 2004).

Researchers have also reported gender differences in online interactions. Caspi, Chajuta, and Saporta (2008) found that while men over-significantly spoke more during the face-to-face instruction, women significantly posted more messages in the web-based discussions. In addition, student online preferences could be influence by the field of study. Finnegan, Morris, and Lee (2008) grouped twenty-two online courses into three wide-ranging fields of study: English and Communication; Social Sciences; and Math, Science, and Technology. They found significant differences in student online participation, persistence, and achievement across the fields.

Past studies have researched factors that may influence students' instructional delivery preferences toward online courses such as individual preferences for control of learning, interaction, social presence, learning environment, and online self-efficacy.

However, none of these studies combine all of these factors to create a profile of students' preferences for online learning comparing the students' generation, gender, field of study and previous online experience.

Purpose of the Study

The purpose of this study was to examine the relationships between age (generations), gender, program of study, and number of online courses previously taken and instructional delivery preferences related to control of own learning, interaction, social presence, learning environment, and online self-efficacy. The goal was to create an empirically-based profile that could be used to better tailor online courses to students' instructional delivery preferences.

Statement of the Research Problem

The researcher used an online survey to investigate online students' instructional delivery preferences. The research questions investigated by the study include the following:

1. To what extent are age, gender, program of study, and online previous experience associated with individual preferences for control of their own learning in students enrolled in online courses at community colleges?
2. To what extent are age, gender, program of study, and online previous experience associated with interactive preferences in students enrolled in online courses at community colleges?
3. To what extent are age, gender, program of study, and online previous experience associated with social presence preferences for control of their own learning in students enrolled in online courses at community colleges?

4. To what extent are age, gender, program of study, and online previous experience associated with learning environment preferences in students enrolled in online courses at community colleges?
5. To what extent are age, gender, program of study, and online previous experience associated with online self-efficacy in students enrolled in online courses at community colleges?

Limitations and Delimitations of the Study

The survey used in the study is a Web-based survey that was sent to the participants as a link included in three emails: the initial invitation email and two reminder emails. The email addresses used were the participants' community college official email address that is supplied to each student enrolled in the institution. The participants took the survey at their convenience.

The researcher identified the following factors as limitations of this study:

1. The data was collected from a self-reported online survey, which could be subject to reporting bias.
2. Not all the online curriculum students asked to participate took the time to complete the survey, which they had to take on their own time.
3. Not all the online curriculum students asked to participate opened the emails inviting them to participate because they might not use the school email accounts.
4. Generalization of findings is limited to the online students at that institution because the study was conducted at only one community college.

The primary delimitation of the study was that it focused only on students 18 years old or older taking one or more online curriculum courses at a single urban community college during a limited time period, spring 2009.

Assumptions

A self-report online survey was used to collect online students' instructional delivery preferences. The data collected was used to determine the relationships between students' individual preferences for control of their own learning, interaction, social presence, learning environment, and computer self-efficacy and generation, gender, program of study, and number of online courses previously taken. The researcher made the following assumptions:

1. That the participants responded truthfully.
2. That the participants took the online survey only once.

Definitions of Key Terms

Because the researcher's purpose was to describe the online students' characteristics regarding online instructional delivery preferences, the study involved the use of terminology related to technology and electronic instruction as well as students' characteristics. The following terms are central to the study:

1. Blogs – A blog is a website where online students write entries in journal style and their entries are displayed in a reverse chronological order.
2. Boom or Baby Boomers – Includes those individuals born between 1943 and 1960 (Strauss & Howe, 1991, p. 32).
3. Chat rooms – Chat rooms are electronic forums where online students can exchange views and opinions about a variety of topics.

4. Course management system - A course management system is a tool used by online instructors to develop, to administer, and to support online instruction. For example, Blackboard or Moodle.
5. Curriculum program – Educational programs offered a community colleges that last in length between one semester to two years ("NC Community Colleges Programs Catalog", 2009).
6. Curriculum students – Students taking courses that are part of a Curriculum Program in a community college ("NC Community Colleges Programs Catalog", 2009).
7. Face-to-Face course – A course delivery traditionally using no online technology (Allen & Seaman, 2005).
8. Generation – Is a cohort-group whose length approximates the span of twenty-two-years long phases of life and whose boundaries are set by peer collective attitudes (Strauss & Howe, 1991, pp. 60-63).
9. Hybrid/Blended course – A course that blends online and face-to-face instruction. In this type of course between 20% to 79% of its content is delivered using online technology.
10. Millennial or Generation Y – Includes those individuals born between 1982 and 2000 (Strauss & Howe, 1991, p. 32).
11. Online course – A course where 80% or more of its content is delivered using online technology (Allen & Seaman, 2005).

12. Online discussions – Online discussions are an asynchronous form of online communications in which students or instructors post entries and others can respond. The responses are displayed in a reverse chronological order.
13. Thirteenth or Generation X – Includes those individuals boom between 1961 and 1981(Strauss & Howe, 1991, p. 32).
14. Virtual classroom – A virtual classroom is a group of online students that are connected to each other through the internet. The instructor is responsible for presenting learning material online and coordinating the activities.
15. Wiki – A wiki is a page or collection of Web pages designed by the online instructor where online students may contribute or modify content.

Summary

The growth experienced in online instruction in community colleges in recent years and the expectation that this trend will continue have created a need for additional research, especially in the area of students' preferences (Allen & Seaman, 2007). Some researchers have identified factors influencing students' online preferences. The constructivist learning model used by many as a guide for the design and delivery of online courses emphasizes the role of the adult learner in making decisions about their own learning regarding learning content, pace of instruction, and how to learn. In addition to self- directectnesed, Norstrop (2002) concluded that students considered their interaction with the course content, peers, and instructor as well as the cognitive strategies built into the online course. Walker and Fraser (2005) recommended that online instructors should look beyond interaction and to focus on psychosocial influences of the online learning environment.

Even when online instruction meets all of these criteria, differences among groups of students may exist. For example, Richardson and Newby (2006) found significant differences in cognitive engagement based on students' age, gender, program of study, and prior experience with online courses. There were also significant differences based on whether students were enrolled in an engineering-related or education program of study. The purpose of this research was to document online students' instructional delivery preferences. The research questions explored by the study included the following:

1. Are age (generation), gender, program of study, and online experience associated with students' online preferences for control of their own learning?
2. Are age (generation), gender, program of study, and online experience associated with students' interaction online preferences?
3. Are age (generation), gender, program of study, and online experience associated with students' online social presence preferences?
4. Are age (generation), gender, program of study, and online experience associated with students' online learning environment preferences?
5. Are age (generation), gender, program of study, and online experience associated with students' online self-efficacy?

In order to answer these questions, the researcher used the following timeline to guide the process in this research study:

1. November 2008 – A letter was sent to the urban community college selected for the study explaining the purpose of the research and asking for permission to conduct the investigation at their organization.

2. January 2009 – Finalized the content of the online survey.
3. February 2009 – Created an account on FreeOnlineSurveys.com with the purpose of housing the online survey on their web site.
4. March 2009 – Created the online survey on FreeOnlineSurveys.com. Got approval from the urban community college and Institution Review Board to conduct the study.
5. April and May 2009 – Online students were invited to participate and to take the online survey. Data was collected electronically as participants completed the surveys.
6. May and June 2009 – The data analysis was conducted.
7. October 2008 through July 2009 – Literature review and writing of the dissertation was done throughout this period.

The remaining chapters of this proposal include the literature review, methodology, results, and summary. The review of literature examines students' instructional delivery preferences such as individual preferences for control of their own learning, interaction, social presence, learning environment, and computer self-efficacy. It presents literature that suggests that online students from different ages, gender, program of study, and number online courses taken may influence online students' instructional delivery preferences.

The method chapter describes the quantitative study, based on the instrument developed by the researcher which has its foundation on the five factors found in the literature to influence online students' preference for delivery of instructions. The sample group for this study involved community college online students enrolled at least one

online course. This chapter includes the pilot and validation study of online instrument. Data collection took place during the last two weeks of April and the first week in May 2009. The data was collected electronically. The collection process included an initial email inviting the randomly selected students to participate in the study. A week and a half after the initial invitation was sent, a remainder email was sent to all participants. One last reminder was sent three weeks after the initial email.

Chapter Four, Analysis and Results, contains the data analysis and the outcomes from the study. It includes the description of the sample population, as well as the findings specific to the five research questions. Lastly in Chapter Five, Discussion, Implications, and Recommendations, the researcher interprets the results and discusses the findings.

CHAPTER 2: REVIEW OF RELATED LITERATURE

The purpose of this chapter is to review the literature related to students' instructional delivery preferences such as individual choices for control of their own learning, interaction, social presence, learning environment, and computer self-efficacy and how they may be influenced by the students' generation, gender, program of study, and number of online courses previously taken. While online instruction is delivered differently in online courses, most use the constructivist learning model as a guide for the design and delivery of instruction (Jonassen, 2002; Jonassen, Davidson, Collins, Campbell, & Haag, 1995) as well as Knowles (2005) andrological assumptions that indicate that adults like to make their own decisions regarding learning content, pace of instruction, and how to learn. The theories driving online instruction, how they explain students' delivery preferences for online courses, and how students' demographics such as generation, gender, program of study, and number of online courses previously taken influence their preferences as well as the research model are described in the following sections.

Underlying Theories Driving Online Learning

Online technologies offer learners the unique opportunity to be in control of their own learning and to make their own decisions regarding learning content, pace of instruction, and how to learn. Constructivist learning strategies as well and adult learning principles are the theories underlying most online courses (Gulati, 2004).

Constructivist Learning Philosophy

Constructivists believe that individuals construct their personal world in their own mind and that these personal constructions define their personal realities. The research conducted by Piaget and Vygotsky, and the educational philosophy of John Dewey are the intellectual basis for constructivism (Bird, 2007). Contrary to the traditional view of knowledge that assumes that learners are passive recipients of knowledge (Gulati, 2008), Dewey (1916), Piaget (1973), Vygotsky (1978) and Bruner (1996) proposed that knowledge is constructed by the learners using previous learning experiences as foundation. The learner plays an active role in understanding and making sense of information (Bird, 2007).

According to Martens (2007) constructivism is not a model nor an approach for instructional design. Instead it is a philosophy of learning based in the thought that knowledge is created by the learner through experiences. For Dewey (1916), knowledge is based on the learners' active experiences as a result of their interaction with the environment. Vygotsky (1978) argued that not only the learners experiences impact what is learned, but also the social context in which the learning takes place. For Vygotsky the learners interaction with other learners and with the teacher are important elements in the creation of knowledge.

For constructivists the mind is viewed as the instrument used to interpret events, objects, and perspectives and not the instrument that remembers and comprehends knowledge. Knowledge is a function of the meaning created by an individual from his or hers experiences and not a function of what someone else says is true. External reality is conceived differently by different individuals; it is based upon their distinctive

experiences with the world and their beliefs about these experiences (Jonassen, Davidson, Collins, Campbell, & Haag, 1995).

Dalgarno (2001) defines the constructivist view of learning as composed by three broad principles. The first principle is that learners form their own representation of knowledge which is built on their own individual experience. Consequently, there is not one correct representation of knowledge. The second principle is that individuals learn through active exploration. Learning takes place when the learners'explorations lead them to discover inconsistencies between their previous knowledge and the current experience. The third principle is that learning happens within a social context. The interaction between learners and between learners and instructors are an important ingredient of the learning process.

In constructivist learning models the age of the learner is irrelevant. It could be used and it has been used at all ages. In online courses offered at higher education institutions, the learners are adult learners. So besides comprehending the contructivist learning models it is important to know about adult learning theories to understand online instruction.

Adult Learning Theory

Androgogy (Knowles, Holton III, & Swanson, 2005), the adult learning theory proposed by Knowles (2005), is based in six core assumptions of adult learning. The first assumption is the learner's need to learn. Learners need to know what they are learning, why they are learning it, and how are they learning it. Second, the self-concept of the learner is autonomous and self-directed. Adults are independent learners that want to be in command of their own learning. Third, the leaner's experience is a valuable resource.

Adults possess prior experiences that should be taken advantage of during instruction. In addition, according to Knowles (2005) the learner's experience create mental models that could help or not the learning. Fourth, the learner is ready to learn those things that are life related and promote the learner's developmental growth. Fifth, the learner's orientation to learning is contextual and problem centered. The sixth assumption is that the adult learner motivation is intrinsic. External incentives are not as important to the adult learner. The adult learner is motivated to learn those things that will pay off for him/her.

Brookfield (1995) on the other hand, indentifies four unique and exclusive adult learning processes. The first process, self-directed learning is the process by which adults take control of their own learning. Specially focusing in how adult learners set their own learning goals, find the appropriate resources, decide on which learning methods to use and assess their progress. The second process, critical reflection, is a form and process of learning distinctive of adults. Adult learners think contextually and critically. The third process, experiential learning is the idea that adult teaching should be based on adults' experiences, and that these experiences are an important resource. The fourth process, learning to learn is the key to adult development. When adults learn how to learn they become lifelong learners.

Because adults tend to be autonomous and self-directed, it is important for adults to be free to direct themselves. Thus the role of the instructor should be that of facilitator of learning. Instructors should actively involve the adult learners in the learning process and should facilitate this process. Instructors should be guides that provide the

appropriate framework for growth to occur (Lieb, 1991). In addition, most adult learners are highly motivated as well as task-oriented (Merriam & Caffarella, 1999).

Both constructivism and adult learner theories stress experiential learning, place ownership of the learning process on the learners, and promote a problem-solving approach to learning (Knowles, Holton III, & Swanson, 2005). Most adults enter educational programs voluntarily and have responsibilities such as families and jobs than make them different from the traditional college student (Cercone, 2008). Adult learners have needs for flexibility of time and space that makes them attracted to online courses (Katz, 2002). Furthermore, flexibility is viewed by most adult learners as an important factor in online course satisfaction (Sun, Tsai, Finger, Chen, & Yeh, 2008).

Online Learning

Students who could not attend traditional college classes have been enrolling in distance education courses since the 19th century (Warren & Holloman, 2005). Over the years, distance education has used various instructional delivery methods such as correspondence course, radio, television, and videotapes to deliver instruction (Prestera & Moller, 2001). Then in the 1990s, many institutions of higher education that offered distance education programs adopted web-based delivery as their new way to deliver their distance learning courses (Khan, 1997; Moore & Kearsiey, 1996; Porter, 1997). Because internet-based instruction allows students to manage and control the timing of instructions and coursework, the internet has become the preferred way of delivering distance education (Shimazu, 2005).

E-learning, online learning, web-based learning, or internet-based are a few terms used to refer to distance education delivered by the internet. Sun, Tsai, Finger, Chen, and

Yeh (2008) uses the term e-learning and defines it as the delivery of education and training through the use of telecommunication technology. Currently, many online courses use course management systems to deliver and manage the instruction. These management systems allow instructors to post announcements, assignments, course documents, faculty information, lecture notes, PowerPoint presentations, and videos that could easily be accessed and downloaded by the students. They also allow for students to interact with the instructor and with other students through the use of e-mails, discussion boards, blogs, wikis, and real-time chats (Morgan, 2003). Computer management systems also allow for one-to-many instruction in which instructors and learners are able to communicate synchronously and solve instructional and learning problems in real time (Becker, 1984). Computer management systems are flexible, and they allow instructors to monitor students' progress as well as modify, reinforce, and model educational processes, and in doing so meet the cognitive needs and requirements of students (Wilson & Whitelock, 1997).

Because of the flexibility offered by internet technologies and the separation in time and space between instructors and learners, the role of the instructor as well as the role of the student is different from the traditional classroom. Online instructors are faced with research that supports the importance of instructors adapting to the needs of the students, communicating effectively, and showing concern for their students as elements of effective online teaching (Young & Norgard, 2006).

On the other hand, online learners not only have to interact with the instructors and peers, but with the online environment as well. Dalgarno (1998) classified learner

activities in a online environment into 14 categories. These categories and examples of activities within the categories are shown in Table 1.

Table 1

Online Activity Categories

Categories	Examples
Attending to fixed information	Reading, looking at diagrams, listening to sounds, and watching movies
Controlling media	Playing, pausing, stoping, fast-forwarding, and downloading media
Navigating the system	Clicking on hypertext links, choosing items from menus, and clicking on icons or hot spots
Answering questions	Answering to multiple choice, true/false, single word, matching, short answer, and essay questions
Attending to question feedback	Feedback may be given in the form of text, diagrams, sounds, animations or movies as a response to something the learner has done.
Exploring the virtual world	Using program tools to explore the different parts of the virtual world presented.
Measuring in the virtual world	Using program tools to measure parts of a simulated world.
Manipulating a virtual world	Adjusting parameters within a simulated system.
Constructing a virtual world	Using tools to design, create, aor construct new entities in the virtual world.
Attending to changes	Reacting to changes that occurred in the virtual environment.
Articulating	Writing comments, drawing diagrams, recording segments, making movies that summarize the learners' understanding concepts.
Processing data	Making sense of data in order to understand a phenomena.
Attending to processed data	Attending to the results of processed data by the system of the learner.
Formatting output	Using tools to change the appearance of information.

Online learners preferences for interaction with the environment and with peers and the instructor has been the subject of research of a few studies. Some of these studies and their results are reviewed in the next section.

Online Learners' Preferences

Many researchers have identified important variables dealing with online learning. A summary of the literature relevant to factors affecting learning preferences with online learning is presented below using five categories: individual preferences, interactive preferences, virtual classroom preferences, environmental preferences, online self-efficacy.

Individual preferences. Biological changes take place as individuals age. Cercone (2008) provided a list of recommendations for the online learning environment to accommodate for the biological changes that take place in adults as they age. Among her recommendations were the following: (a) using large, easy to read fonts and clear, bold colors; (b) employing a variety of graphics, images, and tables; (d) using a clear menu structure; (e) providing practice with feedback and self tests; (f) ensuring that there is no cultural bias; and (g) chunking information in 5-9 bits of information. She also considered important in the learning styles of the online learners because they may determine how individuals approach the learning tasks .

According to Felder (1996), learning styles are the prefered ways in which the learners absorb and process information. Rochford (2003) considers that each person's learning style is formed by a variety of biological and experiential variables. The influence of student learning style in online instructional environments has been the target of some research effort (Fahy & Ally, 2005). Although Aragon, Johnson, and Shaik (2002) found learning style differences between face-to-face and online students, they concluded that the differences were not significant if the study controlled for student success. Neurhauser (2002) and Stokes (2003) found not significant difference in learning

styles between online and face-toface students. Online courses do not favor a particular learning style. For example, Johnson (2006) found that learning style may affect the student preception of different online study tools. Active learners preferred face-to-face study groups rather than online study groups and online quizzes rather than pencil-and-paper quizzes and visual learners preferred online quizzes rather than online study groups. In addition, Howland (2002) found that learning styles and pedagogy were identified by online students as important. She found that students exhibiting attributes of constructivist learners, such as self direction, reported positive attitudes toward online courses.

Interactive preferences. In general, a learning interaction is a shared event between the learner and a part of the learning environment that takes the learner closer to achieving an educational goal (Wagner, 1994). Instructor-to-learner interactions are perceived by students as the most important interaction with regard to learning (Marks, Sibley, & Arbaugh, 2005). However, instructor-learner interaction is just one type of interaction taking place in an online learning environment. Other types of interaction include learner-to-learner interaction and learner-to-content interaction (Dennen, Darabi, & Smith, 2007). Jung, Choi, Lim, and Leem (2002) investigated three types of interactions in online courses: academic, collaborative, and social. They found that social interaction seems to have an effect on performance, that collaborative interaction seems to have an effect on satisfaction and that web-based learning experiences had a positive influence in attitudes toward online learning regardless of the type of interaction.

Swan (2001) concluded that interaction with instructors had a much larger effect on students' satisfaction with online courses than interaction with peers. Nevertheless,

accomplishing this interaction without the physical presence of the students is not an easy task for the online instructor. It requires personally acknowledging individual email postings and giving individualized timely feedback to each one of their online students (Stone & Chapman, 2006). Russo and Campbell (2004) found that the instructor's responsiveness by answering emails and providing timely feedback as well as message tone and style affected student perceptions of presence in online courses.

Online learners' preferences were also studied by Norstrop (2002) who investigated four types of interaction: content, conversation and collaboration, intrapersonal/metacognitive skills, and need for support. He concluded that students considered their interaction with the course content important to their online learning experience, that students rely on their peers and their instructors to form and maintain learning communities, that self-directedness and cognitive strategies built into the online course was important to the participants, and that support was a key to the students online success. Others (T. Anderson, Rourke, Garrison, & Archer, 2001) have recommended looking at interactions in terms of the function they serve. They view interactions as serving an instructional, social, or organizational function.

Regardles if online interactions are between peers, instructors and learners, or between content and learners and the function they perform, they are just one factor influencing students' online preferences. Other factors, such as the environment also influence their online preferences.

Social preferences. Social presence is another important factor in online instruction. According to Russo and Campbell (2004), it is the ability to communicate perceptual and affective characteristics such as warmth and support for personal and

sensitive interaction. In a study, they conducted with 31 students enrolled in graduate and undergraduate asynchronous online classes they found that the communication behaviors that students reported as contributing to a sense that others were present were the interaction frequency, the responsiveness, the use of non-verbal channels of communication, and the participants' communication style or tone.

Brownrigg (2005) researched the role of social presence in online nursing education and found that participants establish their presence in the online environment by making themselves known to others through personal introductions such as self-description, personal disclosure, and indications of personality and they demonstrate ongoing presence through visible activity such as posting messages. Social presence was seen as a cumulative result of the students demonstrations of presence. Students reported a stronger sense of social presence from those they had interacted with more recently.

According to Yang, et al. (2006), five factors define social ability in online learning: perceived peers social presence, perceived written communication skills, perceived instructor social presence, comfort with sharing personal information, and social navigation. Their study of social ability indicated that intrinsic goal orientation is related to perceived peers social presence, that self-efficacy is related to instructor social presence and comfort with sharing personal information, and that task value is associated with social navigation and both perceived peers and instructor social presence.

Enviromental preferences. Walker and Fraser (2005) suggested that online instructors should look beyond student interaction and collaboration when designing courses. Online pedagogy must be personally relevant for students and must address the psychosocial influences of the online learning environment. This perspective is supported

by Braun (2008), who also found that students perceived online courses to be more academically demanding and of equal quality to traditional classroom instruction.

Although students tend to have a slightly more positive perceptions about the instructor and the overall course quality if the course is offered face-to-face, the learning outcomes have been found to be the same (Hoban, Neu, & Castle, 2002; S. D. Johnson, Aragon, Shaik, & Palma-Rivas, 1999; van Schaik, Barker, & Beckstrand, 2003). This is contrary to what Anstine and Skidmore (2005) found in their examination of MBA students that took only online courses, which showed that the online learning environment was substantially less effective than the traditional learning environment.

When student satisfaction measures are taken from students participating in online and traditional delivery methods, Downing and Chim (2004) discovered that students that like to stand back to ponder experiences and evaluate them from many different angles demonstrated higher satisfaction levels with the online method of delivery than their counterparts in classroom-based courses. The additional time for reflection offered by online delivery methods makes this group of learners more likely to contribute to online discussions, and report higher satisfaction levels with online courses.

Online self-efficacy. Online courses rely on computer systems to deliver instruction. In online learning, other factors such as computer self-efficacy may affect students' preferences. According to Torkzadeth, Koufteros, and Pflughoeft "computer self-efficacy not only determines decisions by individuals to accept and use the computer system, but is also a good predictor of achivement in computer-related tasks." (2003, p. 264)

Kenny (2002) explored the experiences of nursing students with online learning. One major theme that emerged from the interviews with the participants in the study was that computer confidence both enhanced and detracted students from learning. “Anxiety, fear, apprehension and dread” were words used by most students to describe their feelings at the beginning of their online experience. For some students the lack of online self-efficacy impacted their learning for the whole semester.

In an attempt to understand the resistance to information technology among educators, Gong and Xu (2004) conducted a study with 280 full-time teachers who were part-time students in a bachelor degree program. Using a combination of the technology acceptance model (TAM) and the social cognitive theory (SCT) to provide a framework for their analysis, they found that the computer self-efficacy (CSE) had substantial influence on the teachers’ technology acceptance.

Sun, Tsai, Finger, Chen, and Yeh (2008) suggested that six dimensions affect learners satisfaction in online courses: the learners, the instructors, the courses, the technology, the design, and the environment. Their study of 295 online students enrolled in 16 different online courses revealed that the learners’ computer anxiety, the instructors’ attitude toward online learning were critical factors affecting the learners’ perceived satisfaction with online courses.

Individual preferences for control of their own learning and learning styles, interaction, social presence, learning environment, and computer self-efficacy affect learners’ preference. Richardson and Newby (2006) also found significant differences in cognitive engagement in online courses based on students’ age, gender, program of study, and prior experience with online courses.

Demographics and Their Influence on Online Preferences

The influence of individual differences on students' choices and eagerness to embrace learning technology often goes unnoticed. To some degree, gender and age are perhaps the only factors that have been studied (Hoskins & Hooff, 2005). However, other factors such as field of study and previous experience could influence the online student preferences.

Age (generations)

The mere action of a person being born makes that individual belong to a generation. Although generations are defined by calendar year, members of a generation share more than closeness in age. They have common attitudes about family life, sex, institutions, politics, religion, lifestyle, how they see the future, and not surprising how they approach learning (Strauss & Howe, 1991, pp. 60-63). Consequently, different generations develop different learning styles and habits. For example, the Millennial Generation or Generation Y is the first generation to grow with computers and the internet. They have been using blogs, wikis, and social networking tools outside and inside the classroom for several years now. The Millennial generation grew up with learning approaches that used teamwork and collaboration. They learned in classrooms with learning pods and subject corners and individualized options. In contrast, most Baby Boomers, which include older adults in their forties and fifties, used the internet for the first time as adults. They learned through lectures and printed text with few opportunities to do something (El-Shamy, 2004, pp. 11-12).

Prensky (2006) noted that there are significant differences in the perceptions and expectations of digital technologies between today's students (native) and those students

not born into the computer world (immigrant). Today's students are native speakers of technology; they are fluent in the language of computers, of video games, and the internet. Andone, Dron, Pemberton, and Boyne (2007) refine Prensky definition of digital students to include the students' need for control over their digital environment. However, Guo, Dobson, and Petrina (2008) found no significant difference with respect to computer competence among different age groups. They imply that the digital divide thought to exist between native and immigrant students may be misleading.

Gender

Researchers have also reported gender differences in online interactions. Caspi, Chajuta, and Saporta (2008) found that while men over-significantly spoke more during the face-to-face instruction, women significantly posted more messages in the web-based discussions. Zembylas (2008) studied adult learners' emotions in online learning and discovered that there are different emotional responses between men and women in relation to their social and gender roles and responsibilities. Although all the learners had to cope with multiple responsibilities while going to graduate school, women are less likely to be relieved of other responsibilities such as childcare and housework when they take up studying online. Sullivan (2001) also found significant differences between the way male and female students identified the strengths and weaknesses of the online environment. Anonymity of online learning does not seem to bring equalization between the genders. Men tend to dominate when the topic is masculine and not when it is feminine (Postmes & Spears, 2002).

Men and women learning in groups utilize different language styles. In face-to-face group environments, the expository speaking style of men may crowd out the

epistolary style of women, leading women to disengage cognitively from the group. In online environments, such crowding out is less likely to occur (Graddy, 2006). In a sample of 67 adults enrolled in five blended courses in a large state university in the US, Ausborn (2004) observed that there were several specific preference differences among groups based on gender and pre-course experience with the online technology.

Field of Study

In addition to age and gender, student online preferences could be influence by the field of study. Finnegan, Morris, and Lee (2008) grouped twenty-two online courses into three wide-ranging fields of study: English and Communication; Social Sciences; and Math, Science, and Technology. They found significant differences in student online participation, persistence, and achievement across the fields.

Richardson and Newby (2006) studied online students enrolled in different programs of study. They documented a statistically significant difference between education and engineering online learners concerning learning strategies and motivation. Education students discover meaning by reading extensively and by interrelating with previous relevant knowledge while the engineering students preferred to get the bare basics and to repeat them through rote learning.

Biglan (1973) classified academic programs into two categories: soft and hard based on the similarity of the subject matter. In a study of 628 students enrolled in distance education courses and representing 22 different academic degree programs, Barnard, Paton and Rose (2007) concluded that students differ in their perceptions of online course communications and collaboration in whether their academic program could be classified as either hard or soft. Barnard, Paton and Rose (2007) using Biglan's

framework classified the programs in their study. As shown in Table 2 they classified as hard, programs associated with science or engineering and as soft programs in the field of education, or management. The results of Barnard, Paton and Rose (2007) study indicated that those students who have better or more positive perceptions of online course communications and collaboration are more likely to be in an academic program classified as soft. They also examined the interaction between student gender and academic program categorized as hard or soft and found that there was no significant difference between female students enrolled in academic programs classified as soft and male students enrolled in academic programs classified as hard regarding their perceptions of online course communications and collaboration.

Table 2

Programs Classified According to Biglan's Framework

Hard	Soft
Agriculture	Agricultural Education
Computer Science	Educational Diagnostician
Crop Science	Educational Leadership
Engineering	Gerontology
Software Engineering	Human Development Family Studies
Systems and Engineering Management	Instruction Technology
	Language Literacy Education
	Master Reading Teacher Preparation
	Orientation and Mobility
	Principal Preparation
	Restaurant, Hotel, and Institutional Management
	Secondary Education Teacher
	Superintendent Preparation
	Special Education
	Technical Communication
	Visual Impairement

Previous Experience

Learning in an environment separated by space and time is a setting that most online learners have not experience before they take their first online course. Many learners experience a level of anxiety related to the online methodology of learning at the beginning of the course. This anxiety decreases as the learners become familiar with online communication and begin to develop a stronger sense of community among themselves through multiple means of communication (Ng, 2001). A major emotional challenge for many online students is learning to communicate in writing in an asynchronous manner (Zembylas, 2008). A few researchers have reported a negative relationship between previous Internet experience and Internet anxiety (Chou, 2003; Joiner et al., 2005).

Previous experience with the Internet was linked to student satisfaction with online learning by Sharpe and Benfield (2005). Also, it was linked by Rodriquez, Ooms, Montanez and Yan (2005) who surveyed 700 professional and graduate education students and reported that satisfaction and perceived quality with online courses was related to the comfort the student felt with the technology and their previous experience with online or hybrid courses.

Research Model

Researchers have developed a variety of instruments to measure some of the factors mentioned earlier. For example, Bangert (2006) developed the *Student Evaluation of Online Effectiveness (SEOTE)* instrument to assess online instruction in higher education. He tested the instrument with 807 college students enrolled in fully online and blended classes. Results suggested that four factors: student faculty interaction,

cooperation among students, time on task, and active learning defined online effectiveness.

Online learners' preferences for interaction was studied by Norstrop (2002). She developed the *Online Learning Interaction Inventory* (OLLI) to investigate four types of interaction: content, conversation and collaboration, intrapersonal/metacognitive skills, and need for support. Walker and Fraser (2005) developed an instrument that offers insight into the psychosocial online environment in higher education. The *Distance Education Learning Environments Survey (DELES)* was tested with 680 college students enrolled in online courses. Sun, Tsai, Finger, Chen, and Yeh (2008) designed an online framework with the following six dimensions to assess perceived e-learner satisfaction: learner dimension, instructor dimension, course dimension, technology dimension, design dimension, and environmental dimension. They discovered that learner anxiety toward computers, instructors' attitude, course flexibility, course quality, perceived course usefulness, and diversity in assessment have significan impact on perceive learning satisfaction in online learning.

Although the instruments mentioned above measure a few of the factors that influence online learners choices, the researcher did not find a single instrument that appraised preferences toward online courses such as individual preferences for control of their learning, interaction, virtual classroom, learning environment, and online self-efficacy. Items from the DELES (2005) and Sun, Tsai, Finger, Chen, and Yeh (2008) questionnaire was adapted for use in this study to create a framework of students' preferences for online learning.

Summary

The constructivist learning model and adult learning theories are used by many as a guide for the design and delivery of online courses. They emphasize the role of the adult learner in making decisions about their ownlearning regarding learning content, pace of instruction, and how to learn (Knowles, Holton III, & Swanson, 2005).

Age, gender, field of study, and previous online experience may influence students' instructional delivery preferences toward online courses such as individual preferences for control of their learning, interaction, social presence, learning environment, and online self-efficacy. Older students that used the internet for the first time as adults have different perceptions and expectations of digital technologies than younger adults that grew up with the technology (Prensky, 2006). Men and women interact differently in online courses. Men tend to participate more when the topic is masculine than it is feminine (Postmes & Spears, 2002). In addition to age and gender, student online preferences could be influence by the field of study. Finnegan, Morris, and Lee (2008) found differences in student online participation, persistence, and achievement across fields of study. Also, the previous experience of the learner with the technology has been linked with their satisfaction with the online course (Sharpe & Benfield, 2005) students become familiar with the technology

The purpose of this research is to examine if there is a relationship between online students' preferences and students' characteristics such as age, gender, field of study, and previous online experience. The following chapter, Chapter Three, contains the method proposed by the researcher to examine if the association exists. It includes questions and hypotheses that drove the study. The chapter, the researcher describes the participants and

setting, the data collection procedures, the design, and the data analysis used in conducting the research.

CHAPTER 3: METHOD

In this chapter, a quantitative study, based on the instrument developed by the researcher will be described. The instrument is based on the five factors found in the literature to influence online students' preference for delivery of instructions. The purpose of the research was to identify online students' instructional delivery preferences such as individual preferences for control of their own learning, interaction, virtual classroom, learning environment, and online self-efficacy and to examine the relationships between the online students' instructional delivery preferences and generations, gender, program of study, and number of online courses previously taken.

The study will investigate the following research questions:

1. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with individual preferences for control of their own learning?
2. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their interactive preferences?
3. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their social presence preferences?

4. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their learning environment preferences?
5. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with online self-efficacy?

The rest of the chapter contains: (1) the statement of hypothesis; (2) the participants and the setting; (3) the procedures; (4) the design and the data analysis; and (5) the summary.

Statement of Hypotheses

The following null hypotheses were developed to address the above research questions:

1. There is no significant relationship between age, gender, field of study, and previous online experience among online community college students with their individual preferences for control of their online learning.
2. There is no significant relationship between age, gender, field of study, and previous online experience among online community college students with their interaction preference.
3. There is no significant relationship between age, gender, field of study, and previous online experience among online community college students with their social presence preference.

4. There is no significant relationship between age, gender, field of study, and previous online experience among online community college students with their learning environment preferences.
5. There is no significant relationship between age, gender, field of study, and previous online experience among online community college students with their online self-efficacy.

Based on the literature review, the researcher expected to find the following:

1. Relationships between age, gender, field of study, and previous online experience with individual preferences for control of their online learning (Brookfield, 1995; Knowles, Holton III, & Swanson, 2005; Richardson & Newby, 2006; Strauss & Howe, 1991)
2. Relationships between age, gender, field of study, and previous online experience with online interactive preferences (Barnard, Paton, & Rose, 2007; Richardson & Newby, 2006).
3. Relationships between age, gender, field of study, and previous online experience with online social presence preferences (Richardson & Newby, 2006).
4. Relationships between age, gender, field of study, and previous online experience with online learning environmental preferences (Braun, 2008; Hoban, Neu, & Castle, 2002; S. D. Johnson, Aragon, Shaik, & Palma-Rivas, 1999; van Schaik, Barker, & Beckstrand, 2003).
5. Relationships between age, gender, field of study, and previous online experience with online self-efficacy (Kenny, 2002).

Participants and Setting

The North Carolina Community College System serves a wide range of students whose needs are met through a variety of training course and curriculum programs. Curriculum programs are planned educational programs that vary in length from one semester to two years. These programs lead to certificates, diplomas or associate degrees ("NC Community Colleges Programs Catalog", 2009). The participants for this study were selected from curriculum students enrolled in at least one online course at a large community college in the North Carolina Community College System. In spring 2009, the community college selected served nearly 18,500 curriculum students from which about nearly 6,500 (34%) took at least one course online.

Online learners are socially and culturally diverse (Voithofer, 2002). The online students' ethnicity and cultural background and the influence they have in online interactions, communication, language, and content has been documented (B. Anderson & Simpson, 2007). To eliminate the influence that ethnicity could have on this study a stratified randomized sample of students taking courses online was used with 50% being white (Non-Hispanic) and 50% being minority (Black, Non-Hispanic; American Indian; Asian; and Hispanic).

Only students who were 18 years or older were invited to participate. Students 18 or older are representative of the population served by community colleges (Provasnik & Planty, 2008) and do not need parental consent to participate in the study. A total of 2,000 (1,000 white and 1,000 minority) of the 6,457 population of curriculum students enrolled in at least one online class in spring 2009 were invited to participate in the study.

According to demographic information supplied by the institution, in the spring 2009 semester 42.7% of curriculum students were male and 57.3% female (Earls, 2009) which is representative of the student population for community colleges which is 40.9% males and 59.1% females (Provasnik & Planty, 2008). Of those curriculum students enrolled in spring 2009 semester, less percentage males (36.4%) enrolled in online curriculum courses compared to 46.0% enrolled in traditional courses. The opposite is true for females. Percentage wise more females (63.6%) enrolled in online curriculum courses compared to 54.0% enrolled in traditional courses.

The median age of students attending community colleges in 2003-2004 between 21 and 30 years old (Provasnik & Planty, 2008). In the institution studied, the online curriculum students enrolled in the spring 2009 semester had a median age of 28.98 (Earls, 2009).

Curriculum online students at the institution enroll in different programs of study. In the spring 2009 semester, almost half of the students enrolled in programs in the humanities field (48%) followed by 19% enrolled in vocational and technical programs. The percentage of students by area of study is reported in Table 3 (Earls, 2009).

Selection Criteria

All the students enrolled in online curriculum courses at the community college selected for the study have emails provided by the institution. The institution generated an electronic list of email addresses of students 18 years or older and who are enrolled in one or more online curriculum courses in the community college. The list indicated if the students were white or minority. From this list, 1,000 emails belonging to white (Non-

Hispanic) students and 1,000 emails belonging to minority students were randomly selected using computer software.

Table 3

Online Curriculum Students Fields of Study

Field of Study	Number of Students	Percent
Humanities	2,794	48%
Vocational/Technical	1,114	19%
Mathematics and Science	396	7%
Education	420	7%
Business/Management	393	7%
Computer/Information Science	366	6%
Health	246	4%
Social/Behavioral Sciences	29	1%
Engineering	15	0%

Sampling

This study used multiple regressions to determine the relationship between age, gender, program of study, and previous experience and each one of the dependent variables: individual preferences, interactive preferences, social presence preferences, learning environment preferences, and online self-efficacy. In multiple regressions, the ratio between the number of cases and independent variables has to be considerable for the results to be meaningful. According to Tabachnick and Fidell (2007), the required sample size for multiple regressions depend in the desired power, alpha level, number of predictor and effect size. Using the A-priori Sample Size Calculator for Multiple Regression (Soper, 2009), anticipating a medium effect size of .15, $\alpha = .05$, $\beta = .20$, and a desired statistical power of .80, the least number of cases required for four predictors was calculated to be 84. Since five multiple regressions will be performed, the minimum required samples size was determined to be 420.

The number of curriculum students taking at least one online course in spring 2009 was 6,457 (Earls, 2009). The expected response rate for Web-based surveys is less than 24% for surveys given after the year 2,000 (Sheehan, 2001). This is in line with the response rate attained in the pilot study conducted by the researcher, which was about 20%. Estimating that a similar response rate will be accomplished in this study, to get a sample size of 420 participants, at least 2,000 students should be asked to participate.

The first week of April, a list of email address for all online curriculum students 18 years or older, taking at least one online course at the community college was generated. From this list, a stratified randomized sample of 2,000 curriculum students taking courses online with 50% being white and 50% being minority was selected using a computer program. On April 14th, 2009, the initial email inviting the 2,000 students selected to participate in the study was sent to the students' email addresses (Appendix A). By May 8, at the close of the survey, 449 students had taken the Web-based survey. This is a response rate of about 22.5%.

Setting

The community college selected for the study is part of a community college system of 58 schools serving 100 counties. In 2003 – 2004 the overall curriculum student enrollment in distance learning in the community college system was of 155,556, 12 % of those enrolled in traditional learning courses (Yim, 2005).

Participants in this study are 18 years or older taking one or more online curriculum courses at a large southeastern community college. More than half of the students at the institution are female (53%). Students are predominantly between the ages of 21 and 30 years old (34%) with 17% less than 21, 22% between 31 and 40, 16%

between 41 and 50, and 11% over 51 years old. The racial makeup is 51% minority and 49% white ("Demographic information by college and by campus", 2003-2004). About half of the students are enrolled in programs in humanities fields (47%) with 13% in business and management fields and 12% in vocational and technical fields ("Curriculum Student Enrollment by Program Code", 2007-2008).

Instrumentation and Procedures

The researcher asked participants to complete a self-administered Internet questionnaire, the *Online Preferences Survey* (OPS). Participants answered questions by simply clicking on a radio buttons corresponding to their responses. The Web-based survey (Appendix B) uses a white background with black lettering. It employes blue lines to group related questions to help with navigational flow. The researcher developed the questionnaire using principles of Tailored Design (Dillman, 2000) and Fowler's survey research methods (Fowler, 2002). The questions are close-ended and were written using simple and clear terminology, avoiding complex questions and vague quantifiers. The questions were field tested by six online students that provided feedback and comments in relation to the clarity of survey instructions, clarity of the questions, clarity of the type of answers expected, and ease in providing answers. Ease of response and question clarity was a priority because it maximizes responses and provides useful data in self-administered surveys in which the participant cannot be probed for clarity (Fowler).

The survey uses questions from the DELES (Walker & Fraser, 2005) instrument to measure online interaction, online social presence preferences, and online environmental preferences. The researcher included additional questions based on adult learning theory (Knowles, Holtson, & Swanson, 2005). Questions related to age, gender,

field of study, and number of previously taken online courses are located at the end of the survey. Their purpose is to make comparisons and to make generalizations to similar populations.

The OPS consists of 38 statements grouped into the five online preferences studied: individual preferences for control of their online learning, interaction, social presence, learning environment, and online self-efficacy. Each statement is ranked using a 5-point rating scale (1 = Strongly Disagree to 5 = Strongly Agree). The option of responding "Not Applicable or Don't Know" was included at the end of the scale. In addition, it includes four demographic questions and two non-Likert type questions: one that asked about how the participant liked to find the answers to questions in online courses and the second on how the participant liked the course organized.

Two UNC Charlotte experts reviewed the survey. One expert provided input regarding online pedagogy and adult learning theory and the other expert evaluated the survey relative to good survey design practices. The survey was revised to incorporated the expert feedback.

In spring 2008, the researcher in collaboration with Patty Tolley conducted a pilot study. The pilot study gave the OPS to 177 students enrolled in online courses at a small community college (Lander & Tolley, 2008). The pilot study was used to determine the reliability and validity of the OPS instrument (Appendix C).

Table 4 reports the demographics of the participants in the pilot study: 83% were female; 36% were Generation Y, 37% were Generation X, and 28% were Baby Boomers. The latter group included one student who was older than the age of 62. Almost half of the students (49%) were enrolled in a health care program of study; 26% were in

business, education, and human services programs; 18% were in science and technology programs; and 7% were studying the arts. The demographic breakdown of participants was similar to that for the general student population. Only 7% of the respondents indicated that they were currently enrolled in their first online course. More than 20% of the students had previously taken six or more online courses.

Table 4

Pilot Study Demographic Information

Variable	Group	*N*	Percent
Generation	Generation Y (18-25)	66	36.3
	Generation X (26-42)	66	36.3
	Boomers/Traditionalists (43 and older)	50	27.4
Gender	Female	152	83.5
	Male	30	16.5
Field of Study	Business/Education/Human Services	46	25.3
	Arts	12	6.6
	Science/Technology	32	17.6
	Health Care	92	50.5
Online Experience	First online course	13	7.1
	1 – 5	128	70.3
	6 – 10	28	15.4
	More than 10	9	4.9

Using LISREL (Jöreskog & Sörborn, 2007), the researcher also conducted a confirmatory factor analysis to test the fit of the five factor model to the empirical data collected from the students during the pilot testing. The analysis confirmed that the learners preference for control of their learning experience, the type of online interaction preferred by the learner, the learners' online social presence preferences, their online environment preferences, and their computer self-efficacy are five factors influencing

students' online preferences. There was a good fit between the pilot sample used in the analysis and the five-factor model. In addition, the researcher calculated the internal consistency reliability of each factor. Internal consistency reliabilities were acceptable for all factors (Cronbach's $\alpha > .72$) except for the learners' online social presence preferences which was not calculated because the large number of missing values.

The original OPS questionnaire was modified. The 5-point rating scale was changed to a 4-point rating scale. The neutral choice "Neither Agree nor Disagree" was eliminated so respondents select a directional opinion category (Dillman, 2000). The "Not Applicable or Don't Know" was kept at the end for those that do not have an opinion. The wording was changed to "Do Not Know/ Does Not Apply". The two non-rating scale questions were eliminated. They provided data in a way that was hard to analyze and compare. The area of study choices were changed to use the fields of study used by the U.S. Department of Education in their 2003 – 2004 report which are: Humanities, Social/Behavioural Sciences, Mathematics and Science, Computer/Information Science, Engineering, Education, Business/Management, Health, Vocational/Technical, and Other. (U.S. Department of Education, 2003-2004). The question related to the age of the participant was changed to an open-ended question in which the participant enters a numeric value for their age instead of selecting from a range of values. The modified OPS instrument questions are included in Appendix D.

The researcher used the modified OPS instrument to collect data for measuring online students' instructional delivery preferences such as individual preferences for control of their own learning, interaction, social presence, learning environment, and online self-efficacy. The modified survey was sent to the participants using a

commercially available web-based tool named FreeOnlineSurveys.com. Students were invited to participate in the study by email (Appendix A). The email included a direct link to the online survey and notified the students that: (1) The survey was being conducted in partial fulfillment of the requirements for a doctoral dissertation at UNC Charlotte and the name of the investigator; (2) purpose of the survey; (3) their participation is voluntary; (4) survey responses are anonymous and confidential; and (5) results will be reported in aggregate using unidentifiable information. Students were notified that by voluntarily clicking on the survey link and taking the online survey they were giving their consent. Students were not given any incentives to participate. Prior to sending the invitation email, the researcher sought permission from the community college to conduct the study. The letter of autorization to conduct the study is found in Appendix E.

Students completed the survey during a three-week administration period from April 14, 2009 to May 8, 2009. Once students accessed the survey, simple but explicit instructions were given for completing it. Students were able to take the survey 24 hours a day, 7 days week as long as they had Internet access.

After the initial invitation email, two reminder emails were sent to the participants. Most researchers support the use of reminder emails following the first invitation email to increase response rates (Shannon & Bradshaw, 2002). Also, the time between the reminder emails was kept short, between 7 to 10 days, to increase response rates (Archer, 2003). The reminder emails are included in Appendix F and G. All three emails used the student's first name in the salutation to make it more personal.

Responses were kept anonymous and confidential. Participants in the study did not provide any personal identification data except for age, gender, field of study, and

number of online courses in which they have previously enrolled so that multiple regressions could be performed. At the end of the administration period, data was downloaded into Microsoft Excel spreadsheet and then imported into SPSS for analysis.

Design and Data Analysis

Survey items were used to operationalize the five dependent variables associated with students' individual learning preferences (INDIV), interactive learning preferences (INTERACT), social presence preferences (VIRTUAL), environmental preferences (ENVIRON), and online self-efficacy (SELFEFF). Actual survey items comprising each subscale are included in Appendix D. At least four survey items, all of which were measured on a 5-point rating scale, comprised each subscale. The internal consistency reliability of each subscale was calculated using Cronbach's α. The relationships between the dependent variables were examined using Pearson's r correlations. They were considered mild or moderate if they were between .28 and 0.62. Descriptive data was collected in the last four questions of the survey.

One method of determining if a relationship exists among the variables is multiple regression. Using students' individual learning preferences (INDIV), interactive learning preferences (INTERACT), social presence preferences (VIRTUAL), environmental preferences (ENVIRON), and online self-efficacy (SELFEFF) as dependent variables and age, gender, field of study, and previous experience as explanatory variables, five multiple regressions were used to determine the relationship between these four factors and the five dependent variables. A single subscale score for each dependent variable was determined using the mean score of all the survey items linked to each construct.

Data was screened prior to analysis to ensure that assumptions relevant to multiple regression were satisfied. The null hypotheses were rejected if $\alpha = .05$.

Summary

The purpose of the research was to examine the relationships between the online students' instructional delivery preferences and generations, gender, program of study, and number of online courses previously taken. The following hypotheses were examined: the existence of no significant relationship between age, gender, field of study, and previous online experience among online community college students with (a) their individual preferences for control of their online learning, (b) their interaction preference, (c) their social presence preference, (d) their learning environment preferences, and (e) their online self-efficacy. Subjects were recruited from a population of online students attending a large community college in North Carolina to address the research questions and hypotheses.

The researcher used the modified OPS instrument to gather data on online students’ preference for delivery of instructions. The instrument identifies online students' instructional delivery preferences such as individual preferences for control of their own learning, interaction, virtual classroom, learning environment, and online self-efficacy and gathers demographic information such as age (generation), gender, program of study, and number of online courses previously taken. Students rated their responses using a 4-point rating scale. Preference measures were calculated by using the mean score of all the survey items linked to each online students' instructional delivery preferences, which were be used as dependent variables in five multiple regressions with age, gender, field of study, and previous experience as the independent variables. The questionnaire

was sent to the participants via email. Descriptive statistics and multiple regressions were used to analyze data relevant to each research question.

Chapter Four contains descriptive statistics regarding the online community college students and the extent of the relationships between age, gender, field of study, and previous experience and the students' online preferences. The results from the multiple regressions used to determine the extent of these relationships are included in Chapter Four.

CHAPTER 4: ANALYSIS AND RESULTS

The study used a web-based survey to examine the relationships between students' individual learning preferences, interactive learning preferences, social presence preferences, environmental preferences, and online self-efficacy and age, gender, field of study, and previous experience. Data were collected from curriculum students (students taking courses that are part of curriculum programs) enrolled in a least one online course at a large community college during the spring 2009 semester. This research study used descriptive statistics and multiple regressions to examine the research questions. The following sections describe the research participants, research questions, and summary. The analysis was performed using SPSS REGRESSION.

Participants

The participants in this study were online curriculum students. Two thousand students (50% white and 50% minority) of 6,457 students enrolled in at least one online course in the spring 2009 semester at a large, urban, community college were invited to take the Web-based Online Preference Survey. Participants consented to participate in the study by clicking on the survey link in the invitation email. Of those invited, 449 took the Web-based survey for a return rate of 22.5%. However, only 382 respondents (19%) completed all the questions. The following sections describe the characteristics of the respondents that completed all the questions in the survey.

Age and Gender

The respondents' ages varied between 18 and 72 years of age. Their median age was 32.7 years old. The data presented in Table 5 shows how the ages of the participants were distributed across six categories. The majority of the participants' age was in the 21 to 30 category (31.9%). It was followed by respondents between the ages of 31 to 40 (26.4%). Most participants were female (72.0%).

Table 5

Participants' Age and Gender (N=382)

Age	Frequency	Percent	Gender	Frequency	Percent
18-20	66	17.3	Female	275	72.0
21-30	122	31.9	Male	107	28.0
31-40	101	26.4			
41-50	59	15.4			
51-60	32	8.4			
>60	2	.5			

Prior Experience and Field of Study

Table 6 shows the percentage of students and the number of online courses previously taken. Students who took one or more online courses were considered as having online experience. As shown in Table 7, the majority of the participants had prior online learning experience. Most respondents indicated that they had taken two or more courses on line (83.5%). Only 16.5% of the respondents indicated taking their first online course. Among the experienced online students, 26.3% of them were Health students, 14.1% were Education students, and 13.8% were in Business/Management.

Students enrolled in the health field (25.7%) represented the largest group of students taking online curriculum courses. This group was followed by students enrolled

in Business/Management (13.6%), Education (13.6%), and Vocational/Technical (12.0%) programs that were about half the number of the students enrolled in health careers.

Table 6

Participants' Number of Online Courses (N=382)

Course	Count	Percent
1st Course	63	16.5
2nd Course	62	16.2
4th Course	49	12.8
3rd Course	43	11.3
More than 10	42	11.0
5th Course	34	8.9
6th Course	31	8.1
8th Course	25	6.5
7th Course	12	3.1
9th Course	11	2.9
10th Course	10	2.6

Table 7

Participants' Previous Online Experience and Field of Study (N=382)

	No Experience		Experience		Total	
Field of Study (FSTUDY)	Count	%	Count	%	Count	%
Humanities	8	12.7	26	8.2	34	8.9
Social/Behavioral Sciences	2	3.2	22	6.9	24	6.3
Mathematics and Science	5	7.9	16	5.0	21	5.5
Computer/Information Sciences	6	9.5	38	11.9	44	11.5
Engineering	2	3.2	9	2.8	11	2.9
Education	7	11.1	45	14.1	52	13.6
Business/Management	8	12.7	44	13.8	52	13.6
Health	14	22.2	84	26.3	98	25.7
Vocational/Technical	11	17.5	35	11.0	46	12.0
Total	63	16.5	319	83.5	382	100.0

Research Questions

In this section, the researcher examined five research questions. These questions were:

1. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with individual preferences for control of their own learning?
2. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their interactive preferences?
3. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their social presence preferences?
4. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their learning environment preferences?
5. To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their online self-efficacy?

In this study, four independent variables were used. They were age, gender, field of study, and previous online experience.

Reliability

Prior to the data analysis the reliability of the instrument was examined. The internal consistency reliability of each subscale was considered acceptable if Cronbach's

$\alpha \geq .70$. Table 8 shows Cronbach's α for each of the subscales. Internal consistency reliability of all subscales was considered acceptable because all Cronbach's α values were greater than .70. Inter-item correlations for survey items comprising each scale were also examined. They varied from .28 to .62, mild to moderate, which was deemed acceptable.

Table 8

Reliability Analysis (N=382)

Sub-Scale	Cronbach's α
Individual Learning Preferences (INDIV)	0.71
Interactive Learning Preferences (INTERACT)	0.81
Social Presence Preferences (VIRTUAL)	0.89
Environmental Preferences (ENVIRON)	0.89
Online Self-efficacy (SELFEFF)	0.82

The researcher examined the scaterplots of the bivariate relationships of the dependent variables. The relationship between the dependent variables appeared to be linear so Pearson's *r* correlations were used to examine bivariate relationships among the dependent variables. Relationships were considered moderate if $r \geq .35$ and strong if $r \geq .65$. The relationships between the dependent variables were mild to moderate, Pearson's r correlations were between .28 and 0.62 (Table 9).

Table 9

Correlation Matrix for Online Preferences Factors (N=382)

	INDIV	INTERACT	VIRTUAL	ENVIRON	SELFEFF
Individual Learning Preferences (INDIV)	_	0.343*	0.281*	0.431*	0.408*
Interactive Learning Preferences (INTERACT)		_	0.548*	0.377*	0.313*
Social Presence Preferences (VIRTUAL)			_	0.497*	0.327*
Environmental Preferences (ENVIRON)				_	0.615*
Online Self-efficacy (SELFEFF)					_

* correlation is significant at the .05 level

Data Screening

Missing data. Most variables had less than 5% missing values, which for a sample size of 449 (sample with all the responses including those with missing values) is considered acceptable (Tabachnick & Fidell, 2007). Only independent variable age and dependent variable VIRTUAL had more than 5% missing values. They had 6% and 7% missing values, respectively. However, the pattern of the missing data is more important than the quantity that is missing. It could indicate a predisposition in the missing data (Tabachnick & Fidell, 2007). The researcher studied the pattern of the missing data to determine if there was bias in the missing data for age and for VIRTUAL. Two dummy variables, one for age and one for VIRTUAL, were created. Each dummy variable had two groups. The first group included the cases with missing values for age, the second group included the cases without missing values for age, the third group the cases with missing values for VIRTUAL, and the fourth group the cases without the missing values

for VIRTUAL. Then, the mean differences between the first and second groups, and between the third and fourth group were tested. The researcher found no patterns between the cases with missing and non-missing values for age and VIRTUAL.

Outliers. The data had univariate and multivariate outliers. There were univariate outliers for INDIV, INTERACT, SELFEFF, and for age. INDIV had five outliers with values under 2.30. INTERACT had five cases with values less than 1.30. SELFEFF had eight values less than 2. Age had one outlier, a subject with age 72 which is high for the sample.

Mahalanobis distance of each case to the centroid of all cases was calculated to determine if the data contained multivariate outliers. Two cases with multivariate outliers were detected. For this reason, the multiple regressions conducted to address the research questions were performed with and without the outliers noting no difference in the results for Individual Preferences, Interactive Preferences, Social Presence Preferences, and Online Self-efficacy. The results for Environmental Presence were slightly different with outliers and without outliers. The decision was made to include the outliers in the data analysis where there was no difference in the results with the understanding that outliers may impact data interpretation and delete them from the Environmental Presence analysis in which there was a difference.

Research Question 1: Individual Preferences

To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with individual preferences for control of their own learning?

A standard multiple regression was conducted to find the relationship between (a) age, (b) gender, (c) field of study, and (d) previous online experience and online students' individual preferences for control of their own learning (INDIV). Similar field of studies were grouped into four categories similar in size: Health, Humanities, MathScience, and Vocational. The Health category which included only Health, the Humanities category which included Education, Humanities, and Social/Behavioral Sciences, the MathScience category which included Computer/Information Science, Engineering, and Mathematics and Science, and the Vocational category which included Business/Management and Vocational/Technical field of studies. The researcher used dummy coding to convert these four categories into three dichotomous variables: Health, MathScience, and Vocational with Humanities as the reference group. In addition, Gender was converted to Female. The means, standard deviations, skewness, and kurtosis for INDIV, INTERACT, VIRTUAL, ENVIRON, SELFEFF, Age, and Experience are reported in Table 10. The frequencies for Field of Study, Female, Health, MathScience, and Vocational are included in Table 11.

An examination of the skewness and kurtosis values suggest that the distributions for all variables are approximately normally distributed (less or equal to absolute value of 1), except for INDIV which skewness was -1.54 and kurtosis 4.86. This suggests a mild departure from normality. Although according to Curran, West, and Finch (1996), the data are normal. They considered data moderately non-normal only when skewness is greater than 2 and kurtosis is greater than 7. Visual examination of the bivariate scatter plots and the plot of the predicted values of INDIV against residuals suggests that homocedastic, linearity, and normality may be assumed although INDIV is slightly

skewed. The collinearity assumption was also met; VIF values were all less than 3. The correlation coefficients among the variables are reported in Table 12.

Table 10

Variables' Means, Standard Deviations, Skewness, and Kurtosis (N=382)

Variable	Mean	σ	Skewness	Kurtosis
INDIV	3.54	0.42	-1.54	4.86
INTERACT	3.04	0.62	-0.64	0.25
VIRTUAL	2.52	0.85	-0.13	-0.69
ENVIRON	2.75	0.84	-0.46	-0.66
SELFEFF	3.39	0.59	-1.16	1.41
Age	32.68	11.40	0.65	-0.41
Experience	4.75	3.24	0.68	-0.73

Table 11

Frequencies

Variable	Category	Value	Frequency	Percent
Field of Study (FSTUDY)	Health Humanities	Health	98	25.7
		Education	52	13.6
		Humanities	34	8.9
		Social/Behavioral Sciences	24	6.3
	MathScience			
		Computer/Information Science	44	11.5
		Engineering	11	2.9
		Mathematics and Science	21	5.5
	Vocational			
		Business/Management	52	13.6
		Vocational/Technical	46	12.0
Female		True	275	72.0
		False	107	28.0
Health		True	98	25.7
		False	284	74.3
MathScience		True	76	19.9
		False	306	80.1
Vocational		True	98	25.7
		False	284	74.3

Table 12

Correlation Coefficients for Individual Preferences and Independent Variables (N=382)

	Age	Female	Health	Math Science	Vocational	Experience
INDIV	.035	.073	.150**	-.118*	-.032	.096*
Age	_	.051	-.014	.063	-.007	.014
Female		_	.286**	-.332**	-.168**	-.038
Health			_	-.293**	-.345**	-.102*
MathScience				_	-.293**	.049
Vocational					_	.063

* correlation is significant at the .05 level ** correlation is significant at the .01 level

The unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), and semipartial correlations (sr_i) are reported in Table 13. The variance accounted for (R^2) equaled .044 (adjusted R^2 = .028), which was significantly different from zero [F(6,375)=2.843, p<.05]. Both Experience and Health had significant betas. The positive significant beta for Experience and Health indicates that students with more online experience and students in health programs tended to have higher INDIV scores compared to students with less online experience and in humanities, social/behavioral sciences, and education programs. Online experience accounted for the most variability (sr_i = .114) of online students' preference for control of their own learning, followed closely by enrollment in a health program (sr_i = .106). The results suggest that there is a relationship between online students' preferences for control of their own learning and field of study and online experience of the student. However, the amount of variance accounted for was small. Students' online experience and students' enrollment in a health programs combined contributed only 4.4% (2.8% adjusted) to the variability of individual preferences.

Table 13

Regression Analysis for Variables Associated to Individual Preferences

Independent Variables	*B*	*β*	sr_i	*t*-value	*p*-value
Intercept	3.408			38.759	.000
Age	.002	.041	.040	.802	.423
Female	.004	.005	.004	.083	.934
Health	.122	.126	.106	2.090	.037
MathScience	-.100	-.094	-.076	-1.502	.134
Vocational	-.022	-.022	-.018	-.363	.717
Experience	.015	.114	.114	2.252	.025

Research Question 2: Interactive Preferences

To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their interactive preferences?

A standard multiple regression was conducted to find the relationship between (a) age, (b) gender, (c) field of study, and (d) previous online experience and online students' interactive preferences in online courses (INTERACT). The means, standard deviations, skewness, and kurtosis for the variables INTERACT, Age, and Experience are reported in Table 10. The frequencies for Field of Study, Female, Health, MathScience, and Vocational are included in Table 11.

An examination of the skewness and kurtosis values suggests that the distributions for all variables are approximately normally distributed (less or equal to absolute value of 1). Visual examination of the bivariate scatter plots and the plot of the predicted values for INTERACT against residuals suggests that homocedastic, linearity, and normality may be assumed. The collinearity assumption was also met; VIF values

were all less than 3. The correlation coefficients among the variables are reported in Table 14 below.

Table 14

Correlation Coefficients for Interactive Preferences and Independent Variables (N=382)

	Age	Female	Health	Math Science	Vocational	Experience
INTERACT	0.029	0.151**	0.054	-0.160**	-0.045	0.079
Age	_	0.051	-0.014	0.063	-0.007	0.014
Female		_	0.286**	-0.332**	-0.168**	-0.038
Health			_	-0.293**	-0.345**	-0.102**
MathScience				_	-0.293**	0.049
Vocational					_	0.063

** correlation is significant at the .01 level

The unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), and semipartial correlations (sr_i) are reported in Table 15. The variance accounted for (R^2) equaled .053 (adjusted R^2 = .038), which was significantly different from zero [$F(6,375)=3.521$, $p<.05$]. MathScience had a significant negative beta. The negative beta for MathScience indicates that online students in mathematics and science, computer/information science, and engineering have lower INTERACT scores compared to students in humanities, social/behavioral sciences and education. MathScience accounted for the variability (sr_i = -.149) of online students' interactive preferences. Online students' preferences for interaction in online courses are associated to field of study. This relationship however, is small. Enrollment in mathematics and science, computer/information science, and engineering programs contributed only in 5.3% (3.8% adjusted) to the variability in interactive preferences.

Table 15

Regression Analysis for Variables Associated to Interactive Preferences

Independent Variables	*B*	*β*	sr_i	*t*-value	*p*-value
Intercept	2.924			22.796	.000
Age	0.002	.033	.033	.657	.511
Female	.123	.089	.080	1.586	.113
Health	-.075	-.053	-.044	-.884	.377
MathScience	-.287	-.185	-.149	-2.957	.003
Vocational	-.153	-.108	-.089	-1.763	.079
Experience	.018	.092	.092	1.825	.069

Research Question 3: Social Presence Preferences

To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their social presence preferences?

A standard multiple regression was conducted to find the relationship between (a) age, (b) gender, (c) field of study, and (d) previous online experience and online students' social presence preferences in online courses (VIRTUAL). The means, standard deviations, skewness, and kurtosis for the variables VIRTUAL, Age, and Experience are reported in Table 10. The frequencies for Field of Study, Female, Health, MathScience, and Vocational are included in Table 11.

An examination of the skewness and kurtosis values suggests that the distributions for all variables are approximately normally distributed (less or equal to absolute value of 1). Visual examination of the bivariate scatter plots and the plot of the predicted values for VIRTUAL against residuals suggests that homocedastic, linearity, and normality may be assumed. The collinearity assumption was also met; VIF values

were all less than 3. The correlation coefficients among the variables are reported in Table 16.

The unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), and semipartial correlations (sr_i) are reported in Table 17. The variance accounted for (R^2) equaled .129 (adjusted R^2 = .115), which was significantly different from zero [F(6,375)=9.231, p<.05]. Experience, Female, and Age had significant positive betas. MathScience had a significant negative beta. The positive significant betas for Experience, Female, and Age indicates that students with more online experience, females, and older students tended to have higher VIRTUAL scores. The negative beta for MathScience indicates that students in mathematics and science, computer/information science, and engineering tended to have lower VIRTUAL scores compared to online students in humanities, social/behavioral sciences, and education. Online experience accounted for the most variability (sr_i = .211) for online students' social preferences, followed by age (sr_i = .175), female (sr_i = .127), and lastly being enrolled in MathScience programs of study (sr_i = -.120). The online students' social presence preferences in online courses are associated to their online experience, their age, their gender, and their field of study. Only 12.9% (11.5% adjusted) of the variability of social presence preferences could be associated to experience, age, gender, and field of study. The result although statistically significant has a small impact on the variability of social presence preferences.

Table 16

Correlation Coefficients for Social Presence Preferences and Independent Variables (N=382)

	Age	Female	Health	Math Science	Vocational	Experience
VIRTUAL	0.177**	0.199**	0.132**	-0.123**	-0.098*	0.192**
Age	_	0.051	-0.014	0.063	-0.007	0.014
Female		_	0.286**	-0.332**	-0.168**	-0.038
Health			_	-0.293**	-0.345**	-0.102*
MathScience				_	-0.293**	0.049
Vocational					_	0.063

* correlation is significant at the .05 level ** correlation is significant at the .01 level

Table 17

Regression Analysis for Variables Associated to Social Presence Preferences

Independent Variables	*B*	*β*	sr_i	*t*-value	*p*-value
Intercept	1.738			10.283	.000
Age	.013	.175	.174	3.612	.000
Female	.241	.127	.114	2.365	.019
Health	.093	.048	.040	.827	.409
MathScience	-.255	-.120	-.096	-1.998	.046
Vocational	-.209	-.107	-.088	-1.827	.068
Experience	.056	.212	.211	4.373	.000

Research Question 4: Environmental Preferences

To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with their learning environment preferences?

A standard multiple regressions was conducted to find the relationship between (a) age, (b) gender, (c) field of study, and (d) previous online experience and online students' environmental preferences in online courses (ENVIRON). However when the

multiple regression was conducted with multivariate outliers and without multivariate outliers, the results were slightly different.

With multivariate outliers. The means, standard deviations, skewness, and kurtosis for ENVIRON, Age, and Experience with outliers are reported in Table 10. The frequencies for Field of Study, Female, Health, MathScience, and Vocational without outliers are included in Table 11.

An examination of the skewness and kurtosis values suggests that the distributions for all variables are approximately normally distributed (less or equal to absolute value of 1). Visual examination of the bivariate scatter plots and the plot of the predicted values for ENVIRON against residuals suggests that homocedastic, linearity, and normality may be assumed. The collinearity assumption was also met; VIF values were all less than 3. The correlation coefficients among the variables are reported in Table 18.

Table 18

Correlation Coefficients for Environmental Preferences and Independent Variables (N=382)

	Age	Female	Health	Math Science	Vocational	Experience
ENVIRON	0.108*	0.106*	0.033	-0.142**	-0.014	0.228**
Age	_	0.051	-0.014	0.063	-0.007	0.014
Female		_	0.286**	-0.332**	-0.168**	-0.038
Health			_	-0.293**	-0.345**	-0.102*
MathScience				_	-0.293**	0.049
Vocational					_	0.063

* correlation is significant at the .05 level ** correlation is significant at the .01 level

The unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), and semipartial correlations (sr_i) are reported in Table 19. The variance accounted for (R^2) equaled .097 (adjusted R^2 = .097), which was significantly different from zero [F(6,375)=6.727, p<.05]. The positive betas for Experience and Age indicates that students with more online experience as well as older students tended to have higher ENVIRON scores. The negative beta for MathScience indicates that students in math and science, computer/information science, and engineering tended to have lower ENVIRON scores compared to students in humanities, social/behavioral science, and education. Online experience accounted for the most variability (sr_i = .239) for online students' environmental preferences, followed by being enrolled in a MathScience program (sr_i = -.183), and lastly age (sr_i = .113). Online students' environmental preferences in online courses are associated to their online experience, their age, and their field of study.

Table 19

Regression Analysis for Variables Associated to Environmental Preferences

Independent Variables	*B*	*β*	sr_i	*t*-value	*p*-value
Intercept	2.258			13.245	.000
Age	0.008	.113	.112	2.287	.023
Female	.084	.045	.040	.814	.416
Health	-.073	-.038	-.032	-.650	.516
MathScience	-.386	-.183	-.147	-2.996	.003
Vocational	-.062	-.087	-.072	-1.462	.145
Experience	.062	.239	.237	4.830	.000

Without multivariate outliers. The means, standard deviations, skewness, and kurtosis for Age, Experience, and ENVIRON without outliers are reported in Table 20.

The frequencies for Field of Study, Female, Health, MathScience, and Vocational with outliers are included in Table 21.

Table 20

Variables' Means, Standard Deviations, Skewness, and Kurtosis (N=380)

Variable	Mean	σ	Skewness	Kurtosis
INDIV	3.54	0.42	-1.54	4.87
INTERACT	3.04	0.62	-0.64	0.25
VIRTUAL	2.52	0.85	-0.13	-0.69
ENVIRON	2.74	0.84	-0.45	-0.66
SELFEFF	3.38	0.59	-1.16	1.40
Age	32.50	11.16	0.58	-0.64
Experience	4.74	3.23	0.68	-0.72

Table 21

Frequencies (N=380)

Variable	Category	Value	Frequency	Percent
Field of Study (FSTUDY)	Health Humanities	Health	98	25.8
		Education	52	13.7
		Humanities	34	8.9
		Social/Behavioral Sciences	24	6.3
	MathScience			
		Computer/Information Science	44	11.6
		Engineering	11	2.9
		Mathematics and Science	21	5.5
	Vocational			
		Business/Management	52	13.7
		Vocational/Technical	44	11.6
Female		True	274	72.1
		False	106	27.9
Health		True	98	25.8
		False	282	74.2
MathScience		True	76	20.0
		False	304	80.0
Vocational		True	96	25.3
		False	284	74.7

An examination of the skewness and kurtosis values suggests that the distributions for all variables are approximately normally distributed (less or equal to absolute value of 1). Visual examination of the bivariate scatter plots and the plot of the predicted values for ENVIRON against residuals suggests that homocedastic, linearity, and normality may be assumed. The collinearity assumption was also met; VIF values were all less than 3. The correlation coefficients among the variables are reported in Table 22.

Table 22

Correlation Coefficients for Environmental Preferences and Independent Variables (N=380)

	Age	Female	Health	MathScience	Vocational	Experience
ENVIRON	.090*	.111*	.037	-.139*	-.027	.229*
Age	_	.057	-.005	.072	-.034	.004
Female		_	.286*	-.334**	-.165**	-.047
Health			_	-.295**	-.343**	-.102*
MathScience				_	-.291**	.051
Vocational					_	.060

* correlation is significant at the .05 level ** correlation is significant at the .01 level

The unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), and semipartial correlations (sr_i) are reported in Table 23. The variance accounted for (R^2) equaled .096 (adjusted R^2 = .081), which was significantly different from zero [$F(6,373)=6.579$, $p<.05$]. The positive betas for Experience indicates that students with more online experience tended to have higher ENVIRON scores. The negative beta for MathScience indicates that students in mathematics and science, computer/information science, and engineering tended to have lower ENVIRON scores compared to those in humanities, social/behavioral sciences, and education. Online

experience accounted for the most variability (sr_i = .240) for online students' environmental preferences, followed by being enrolled in a MathScience program (sr_i = -.145). Online students' environmental preferences in online courses are associated to their online experience and their field of study. Although the relationship between online experience and field of study and environmental preferences is statistically significant, the impact of experience and field of study on environmental preferences is small. Only 9.6% (8.1%) of the variability in environmental preferences could be associated to online experience and field of study.

Removing the outliers resulted in Age not being significant. For this reason, only the results without the outliers were used to study Environmental Preferences.

Table 23

Regression Analysis for Variables Associated to Environmental Preferences (N=380)

Independent Variables	*B*	*β*	sr_i	*t*-value	*p*-value
Intercept	2.279			13.183	.000
Age	0.007	.096	.095	1.929	.054
Female	.097	.052	.046	.942	.347
Health	-.074	-.038	-.032	-.654	.514
MathScience	-.378	-.180	-.145	-2.939	.003
Vocational	-.184	-.095	-.078	-1.585	.114
Experience	.063	.242	.240	4.876	.000

Research Question 5: Online Self-efficacy

To what extent are age, gender, field of study, and previous online experience of students enrolled in online courses at community colleges associated with online self-efficacy?

A standard multiple regression was conducted to find the relationship between (a) age, (b) gender, (c) field of study, and (d) previous online experience and online students'

online self-efficacy (SELFEFF). The means, standard deviations, skewness, and kurtosis for the variables SELFEFF, Age, and Experience are reported in Table 10. The frequencies for Field of Study, Female, Health, MathScience, and Vocational are included in Table 11.

An examination of the skewness and kurtosis values suggests that the distributions for all variables are approximately normally distributed (less or equal to absolute value of 1). Visual examination of the bivariate scatter plots and the plot of the predicted values for SELFEFF against residuals suggests that homocedastic, linearity, and normality may be assumed. The collinearity assumption was also met; VIF values were all less than 3. The correlation coefficients among the variables are reported in Table 24.

Table 24

Correlation Coefficients for Online Self-Efficacy and Independent Variables (N=382)

	Age	Female	Health	Math Science	Vocational	Experience
SELFEFF	0.035	-0.027	-0.048	-0.007	-0.003	0.181**
Age	_	0.051	-0.014	0.063	-0.007	0.014
Female		_	0.286**	-0.332**	-0.168**	-0.038
Health			_	-0.293**	-0.345**	-0.102*
MathScience				_	-0.293**	0.049
Vocational					_	0.063

* correlation is significant at the .05 level ** correlation is significant at the .01 level

The unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), and semipartial correlations (sr_i) are reported in Table 25. The variance accounted for (R^2) equaled .038 (adjusted R^2 = .023), which was significantly different from zero [$F(6,375)=2.486$, $p<.05$]. Only Experience had significant beta. The

positive significant beta for Experience indicates that students with more online experience tended to have higher SELFEFF scores. Only online experience accounted for the variability (sr_i = .179) in students' online self-efficacy. Online students' self-efficacy is associated to the online experience of the student. Although experience had a positive significant beta, the variability in online self-efficacy that may be predicted by knowing experience is small (3.8%, adjusted 2.3%).

Table 25

Regression Analysis for Variables Associated to Online Self-efficacy

Independent Variables	*B*	*β*	sr_i	*t*-value	*p*-value
Intercept	3.261			26.439	.000
Age	0.002	.037	.037	.802	.470
Female	-.048	-.037	-.033	-.651	.515
Health	-.078	-.057	-.048	-.948	.344
MathScience	-.095	-.064	-.052	-1.020	.309
Vocational	-.080	-.059	-.048	-.956	.340
Experience	.033	.180	.179	3.535	.000

Summary

This research study used descriptive statistics and five multiple regressions to examine the extent of the relationship between age, gender, field of study, and previous online experience among online community college students and their individual preferences for control of their online learning, their interaction preference, their social presence preference, their learning environment preferences, and their online self-efficacy. Data was screened prior to analysis to ensure that assumptions relevant to multiple regression were satisfied. Table 26 summarizes the significant results of the multiple regressions.

Table 26

Multiple Regressions Significant Results

Independent Variables	INDIV	INTERACT	VIRTUAL	ENVIRON	SELFEFF
	β	*β*	*β*	*β*	*β*
Intercept					
Age	.041	.033	.175*	.096	.037
Female	.005	.089	.127*	.052	-.037
Dummy Coding for Field of Study with Humanities as reference group					
Health	.126*	-.053	.048	-.038	-.057
MathScience	-.094	-.185*	-.120*	-.180*	-.064
Vocational	-.022	-.108	-.107	-.095	-.059
Experience	.114*	.092	.212*	.242*	.180*
R^2	.044*	.053*	.129*	.096*	.038*
N	382	382	382	380	382

*significant at $p<.05$

Findings suggest that online students with previous online experience tend to have higher scores in individual learning preferences, social presence preferences, environmental preferences, and online self-efficacy. Experience was not found associated with interactive learning preferences.

In addition, a significant relationship between program of study and online students' individual preferences, interactive learning preferences, social presence preferences, and environmental preferences was found. Online students in health programs of study tend to have higher scores compared with students in humanities, social/behavioral sciences, and education in individual preferences, while mathematics and science, computer/information science, and engineering online students tend to have lower scores in interactive learning preferences, social presence preferences, and environmental preferences.

Age and gender were found to be associated only with social presence preferences. Older online students and females tend to score high in social presence preferences. A few significant relationships were found between the four independent variables and the five dependent variables. For each preference, the amount of variance accounted by age, gender, field of study, and previous experience was small. It ranged from 3.8% to 12.9%.

Chapter Five includes the discussion of the findings, implications for online courses, and recommendations for future studies. The findings will be discussed as they relate to previous research.

CHAPTER 5: DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

A significant number of students at community colleges are taking courses online. While this number is expected to grow, students' perceptions of online courses are varied. Students like the time flexibility of class participation and cost-effectiveness of online instruction, but dislike some of the instructional methods and the course content design used in some online courses (Yang & Cornelious, 2004). The purpose of this study was to examine the relationships between age, gender, program of study, and number of online courses previously taken and instructional delivery preferences related to students' control of their own learning, interaction, social presence, learning environment, and online self-efficacy. The research study described these online student's instructional preferences and technology self-efficacy and assessed the relationship between these preferences and age (generations), gender, field of study, and previous online experience. In this chapter the researcher will discuss the findings as they relate to previous literature, implications for online courses, and recommendations for future research.

Online Students' Individual Preferences

Individual preferences refer to how much control of their own learning online students' like in their online courses. Findings in this study suggest that there is a relationship between online students' individual preferences and field of study and online experience of students. Both experience and being enrolled in a health program had

significant betas, which indicate that students with more online experience and students in health compared to students in humanities, social/behavioral sciences, and education tended to score higher in their preference to be in control of their online learning. Experienced online students and online health students scored higher in individual preferences that suggests that they have higher preference for knowing at the beginning of the semester what is required and due dates, for working alone and at their own pace, for making decisions about their learning, and for customizing their online courses. Although the findings were statistically significant, the amount of variance accounted for experience and being enrolled in a health program was small. Students' online experience and students' enrollment in a health programs contributed only in 4.4% (2.8% adjusted) to the variability of individual preferences.

In addition, the results indicate that most online students like to be in control of their own learning. The individual preferences mean score in this subscale was in the high range (3.54). Nearly all of the participants indicated that they like knowing at the beginning of the semester what assignments are required and when they are due. Eighty-nine percent of the students preferred to work on their own rather than in a group and 94% liked working at their own pace. Almost 91% of the students liked making decisions about how they learn, and 82% liked making decisions about learning content. Yet only 49% liked to customize the online course site by choosing their own fonts, colors, and background. Of those that liked to tailor their course site, one-third were enrolled in health programs, 84% had previous online experience, and almost three-fourth were 18 and 40 years of age.

These findings are consistent with Knowles (2005) adult learning theory which states that adult learners are independent learners that want to be in command of their own learning and need to know what, why, and how they are learning. Also, with Brookfield (1995) first process of adult learning which focuses in how adult learners set their own learning goals, find the appropriate resources, decide on which learning methods to use and assess their progress.

Online Students' Interactive Preferences

Interactive preferences refer to how online students like to interact with their peers and instructor in online courses. Online students' preferences for interaction in online courses tend to be associated to field of study. Online students enrolled in mathematics and science, computer/information science, and engineering showed a significant negative beta in interactive preferences. The negative beta for mathematics and science, computer/information science, and engineering online students suggests that compared to online students in humanities, social/behavioral sciences, and education they have lower interactive preferences scores. Being in a mathematics and science, computer/information science, and engineering program of study accounted for the variability in online students' interactive preferences. However, the amount was small. Enrollment in mathematics and science, computer/information science, and engineering programs contributed only in 5.3% (3.8% adjusted) to the variability in interaction preferences.

The findings suggest that compared with humanities, social/behavioral sciences, and education online students, mathematics and science, computer/information science and engineering online students tend to like less participating in online discussions,

writing blogs, reading other students posts, participating in online activities with other students, selecting online teammates, emailing the instructor, and emailing their peers. This is supported by Barnard, Paton, and Rose (2007) study that found difference in the way online students collaborate depending if their academic program could be classified with science or engineering or with education or management. Also, it is supported by Richardson and Newby (2006) that documented a statistically significant difference between education and engineering online students and by Finnegan, Morris, and Lee (2008) that found significant differences in student online participation across field of study.

Overall, the raw scores indicate that three-fourth of the students enjoyed participating in online discussions and 82% liked reading what other students post on discussion boards and blogs. However, only 40% of the students indicated that they liked writing blogs.

Online Students' Social Presence Preferences

Social presence preferences refer to how online students like getting to know and making friends with other online classmates in an online environment (virtual classroom). The study findings suggest that there is a relationship between online students' social presence preferences in online courses and online previous experience, age, gender, and field of study. Online students with more online experience, females, and older students tended to have higher social preferences scores, while online students enrolled in mathematics and science, computer/information science, and engineering tended to have lower social preferences scores compared to online students enrolled in humanities, social/behavioral sciences, and education. Online experience accounted for the most

variability in social preferences, followed by age, female, and lastly being enrolled in mathematics and science, computer/information science, or engineering. Because only 12.9% (11.5% adjusted) of the variability of social presence preferences could be associated to experience, age, gender, and field of study, their effect on social preferences is small.

The findings suggest that it is easier for experienced online students, older students, and female online students to get to know their virtual classmates because they like to introduce themselves and make friends in their online virtual classroom. On the other hand, mathematics and science, computer/information science, and engineering online students compared to humanities, social/behavioral sciences, and education online students tend to find it less easy to get to know their virtual classmates because they like less to introduce themselves and to make friends in their online virtual classroom. This is consistent with Richardson and Newby (2006) who found significant differences in cognitive engagement in online courses based on students' age, gender, program of study, and prior experience with online courses.

The raw scores indicate that almost two-thirds of the students preferred meeting people in a traditional classroom course. Although almost the same amount like introducing themselves and getting to know other students in an online course.

Online Students' Environmental Preferences

Environmental preferences refer to online students' preferences in taking online courses as it compares to traditional classroom courses. Online students high in environmental preferences favor learning online rather than in a traditional classroom, find online courses academically easier than face-to-face courses, enjoy online courses

and preferred them to traditional courses. The study finding suggest that online students' environmental preferences in online courses are associated to previous online experience and to field of study. Students with more online experience tended to have higher environmental scores while online students enrolled in mathematics and science, computer/information science, and engineering programs tended to have lower environmental preferences scores. Online experience accounted for the most variability in online students' environmental preferences, followed by being enrolled in mathematics and science, in computer/information science, or in an engineering program of study. Although the relationship between online experience and field of study and environmental preferences is statistically significant, the effect that experience and field of study have on environmental preferences is small. Only 9.6% (8.1%) of the variability in environmental preferences was associated to online experience and field of study.

Raw scores show that 63% of the students felt that online courses are harder than traditional classroom courses. About the same percentage felt they learn as much in an online course as compared to face-to-face. This perspective is supported by Braun (2008), who also found that students perceived online courses to be more academically demanding and of equal quality to traditional classroom instruction. About 60% of the students preferred learning and taking courses online and most (82%) enjoyed taking online courses. However this is not supported by the literature which sustains that students tend to have a slightly more positive perceptions about the instructor and the overall course quality if the course is offered face-to-face (Hoban, Neu, & Castle, 2002; S. D. Johnson, Aragon, Shaik, & Palma-Rivas, 1999; van Schaik, Barker, & Beckstrand, 2003).

Online Self-efficacy

Online self-efficacy refers to how comfortable the online students feels with computer technology. Online courses rely on computer systems to deliver instruction. In online learning, other factors such as computer self-efficacy may affect students' preferences. The findings in this study suggest online students' self-efficacy is associated to the online experience of the student. Students with more online experience tended to have higher online self-efficacy scores. Only online experience accounted for the variability in students' online self-efficacy. Although experience had a positive significant beta, the variability in online self-efficacy that may be predicted by knowing experience is small (3.8%, adjusted 2.3%).

According to Kenny (2002), "anxiety, fear, apprehension and dread" were words used by most students to describe their feelings at the beginning of their online experience. However, computer anxiety improves as the students gain experience with the technology.

Overall, students were generally comfortable navigating online course sites, conducting research online, and using online course technologies. About two-thirds of the students indicated that they remain calm when computer problems arise while taking online courses.

There were significant relationships between: a) students' individual learning preferences and experience and program of study; b) interactive learning preferences and program of study; c) social presence preferences and age, experience, gender, and program of study; d) environmental preferences and experience and program of study;

and e) online self-efficacy and experience. However, the variability of the dependent variables accounted by the independent variables mentioned above was small.

Students like making decision of how and what they learn. They like participating in online discussion and getting to know their online peers reading others postings but not writing blogs. Students like knowing at the beginning of the semester what was expected of them. They reported that they were comfortable using online course technologies and preferred to learn online although they found it to be academically harder.

Implications for Online Learning

Online courses at community colleges is expected to grow. As the population taking online courses becomes more diverse relative to age, gender, field of study, and previous online experience, the results of this study would be useful in understanding their preferences.

Findings suggest that online students with previous online experience tend to like to be in control of their own learning, like knowing and making friends with their online peer, enjoy and prefer online courses, and feel comfortable with online course technologies. An effort should be made by the community colleges to provide students with ways that give this experience prior to taking their first online course.

In addition, mathematics and science, computer/information science, and engineering online students compared to humanities, social/behavioral sciences, and education online students tend to like less participating in online discussions, writing and reading blogs, and online groups, getting to know and making friends with their online classmates, and taking courses online. Older online students and females tend to like more getting to know and making friends with their online classmates. Although the

variability they caused on self-efficacy was small, it could be beneficial for online instructors to be aware of these findings. Most students are comfortable using online technologies and preferred to learn online although they consider it to be academically harder.

Recommendations for Further Study

Several recommendations for additional research could be made as a result of this study. First, more needs to be known and understood regarding online students' preferences. In this study, only five areas of students' preferences were explored. Other areas such as online support preferences should be studied. As Simonson (2002) indicated, student support, library services, student training, access to online resources are areas that may impact students' perceptions of online courses.

Second, study faculty online preferences and compared them with students' preferences. Their preferences are interrelated in an online course, they work together to create a positive learning environment for online students. It is important to find out how they are related, and how they influence students' satisfaction of online learning.

Third, this study focused on students likes with respect to different aspects of online learning not the quantity or quality of it. For example, online students may like participating in online discussions, but not the quantity or quality of them.

Fourth, some of the survey items should be revised to ensure clarity and accuracy of responses. This is especially true for Social Presence Preferences, which had a large percentage of missing values for all items in the scale. The meaning of the word "virtual" may not be interpreted as intended by the researcher.

Fifth, although the survey response rate of 22% was within the expected return rates for web-based surveys (Sheehan, 2001), it limits the value of the results. Future researchers may want to send postcards prior to emailing the link to improve return rates (Dillman, 2000).

Lastly, because the study was conducted in only one urban community college in a southeastern state, the results may be different if conducted in other institutions of higher education. Further studies should be conducted to validate the results.

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APPENDIX A: INITIAL INVITATION EMAIL

Dear *Student's First Name:*

As part of a doctoral dissertation at the University of North Carolina at Charlotte, I am conducting a 5 minutes survey to determine if there are differences among community college students enrolled in online courses relative to their preference and use of instructional strategies. Your feedback may help improve the online learning experience for online students.

Your participation in this study is voluntary. There is no cost and no risk to participate.

Your responses are anonymous and confidential. You will not be personally identified in any reports that are generated as a result of participation.

To complete survey, **click on the hyperlink below**. Clicking on the link indicates that you have read this post and voluntarily agree to participate in this study.

http://FreeOnlineSurveys.com/rendersurvey.asp?sid=oam50fzwmdzlizj555018

If you have any concerns or questions about your treatment as a subject in this project, contact Dr. Terri Manning, CPCC Planning and Research, P.O. Box 35009, Charlotte, NC 28235 (704) 330-6597 and UNC Charlotte Research Compliance Office at (704) 687-3309. If you have questions concerning the study, contact the investigators, Ms. Maria Lander at lander.research@gmail.com or Dr. John Gretes at jagretes@uncc.edu.

Thanks,

Maria Lander

APPENDIX B: ONLINE PREFERENCES SURVEY

Online Preferences Survey

Your participation in the Online Preferences Survey is important. The information you provide will help understand the online preferences of students taking courses online so that future courses could be tailored to fit these preferences.

Your participation to this survey is voluntary. Your responses will be completely confidential. This survey will be anonymous. No individual will be identified in the analysis and report.

The survey will take you about 5 minutes to complete.

1) **Individual Learning Preferences**

In online courses I like (indicate your level of agreement):

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Do Not Know / Does Not Apply
Knowing at the beginning of the semester what assignments are required.	☐	☐	☐	☐	☐
Knowing at the beginning of the semester when assignments are due.	☐	☐	☐	☐	☐
Working on my own rather than in a group.	☐	☐	☐	☐	☐
Working at my own pace.	☐	☐	☐	☐	☐
Making decisions about learning content.	☐	☐	☐	☐	☐
Making decisions about how I learn.	☐	☐	☐	☐	☐
I like to customize online course sites such as choosing my own fonts, colors, and backgrounds.	☐	☐	☐	☐	☐

APPENDIX B (*continued*)

2) **Interactive Learning Preferences**

In online courses (indicate your level of agreement):

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Do Not Know / Does Not Apply
I like participating in online discussions.	☐	☐	☐	☐	☐
I like writing blogs.	☐	☐	☐	☐	☐
I like reading what other students post on discussion boards and blogs.	☐	☐	☐	☐	☐
I like participating in online activities with other students because it helps me learn.	☐	☐	☐	☐	☐
If I have to do a group project, I prefer to select my teammates rather than being assigned to a group.	☐	☐	☐	☐	☐
I like to use email to communicate with my instructor.	☐	☐	☐	☐	☐
I like to use email to communicate with classmates.	☐	☐	☐	☐	☐

3) **Virtual Classroom Preferences**

Indicate your level of agreement:

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Do Not Know / Does Not Apply
It's easier for me to get to know people in a virtual classroom than it is in a traditional classroom course.	☐	☐	☐	☐	☐
I like introducing myself in a virtual classroom.	☐	☐	☐	☐	☐
I like getting to know other students in a virtual classroom.	☐	☐	☐	☐	☐
I like making friends in a virtual classroom.	☐	☐	☐	☐	☐

APPENDIX B (*continued*)

4) **Environmental Preferences**

Indicate your level of agreement:

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Do Not Know / Does Not Apply
I prefer to learn via an online course rather than in a traditional classroom course.	☐	☐	☐	☐	☐
Online courses are easier academically than traditional classroom courses.	☐	☐	☐	☐	☐
I learn as much in an online course as I do a traditional classroom course.	☐	☐	☐	☐	☐
I prefer to take an online course rather than a traditional classroom course.	☐	☐	☐	☐	☐
I enjoy taking online courses.	☐	☐	☐	☐	☐

5) **Online Self-Efficacy**

Indicate your level of agreement:

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Do Not Know / Does Not Apply
I can easily navigate my online course sites to find information I need.	☐	☐	☐	☐	☐
I can easily conduct research online to find information that is not available on my course sites.	☐	☐	☐	☐	☐
I can easily use online course technologies to learn.	☐	☐	☐	☐	☐
I remain calm when computer problems arise while participating in an online course.	☐	☐	☐	☐	☐
I have the technical ability to take online courses.	☐	☐	☐	☐	☐

APPENDIX B (*continued*)

6) What is your age as of your last birthday?

7) What is your gender?

- ☐ Female
- ☐ Male

8) What is your field of study? (choose one)

- ☐ Humanities
- ☐ Social/Behavioral Sciences
- ☐ Mathematics and Science
- ☐ Computer/Information Science
- ☐ Engineering
- ☐ Education
- ☐ Business/Management
- ☐ Health
- ☐ Vocational/Technical
- ☐ Other (Please Specify):

9) How many online courses total have you taken at a community college?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10
- ☐ More than 10

Finish Survey

Item #	Name	Label	Response Values and Labels
In online courses I like (indicate your level of agreement):			
Q1a	INDIV1	Knowing at the beginning of the semester what assignments are required.	1 = Strongly Disagree
Q1b	INDIV2	Knowing at the beginning of the semester when assignments are due.	2 = Disagree
Q1c	INDIV3	Working on my own rather than in a group.	3 = Neither Agree nor Disagree
Q1d	INDIV4	Working at my own pace.	4 = Agree
Q1e	INDIV5	Making decisions about learning content.	5 = Strongly Agree
Q1f	INDIV6	Making decisions about how I learn.	6 = Do Not Know/Does Not Apply
In online courses (indicate your level of agreement):			
Q2a	INTERACT1	I like participating in online discussions.	
Q2b	INTERACT2	I like writing blogs.	1 = Strongly Disagree
Q2c	INTERACT3	I like reading what other students post on discussion boards and blogs.	2 = Disagree 3 = Neither Agree nor Disagree
Q2d	INTERACT4	I like participating in online activities with other students because it helps me learn.	4 = Agree 5 = Strongly Agree
Q2e	INTERACT5	If I have to do a group project, I prefer to select my teammates rather than being assigned to a group.	6 = Do Not Know/Does Not Apply
Q3	OINQUIRY	When I have a question I like to (choose one):	1 = Find an answer on my own. 2 = Post it on the discussion board. 3 = Email a classmate. 4 = Email the instructor. 5 = Chat online with a classmate. 6 = Chat online with the instructor. 7 = Call a classmate. 8 = Call the instructor. 9 = Meet with a classmate. 10 = Meet with the instructor.

Item #	Name	Label	Response Values and Labels
When I have a reading assignment in an online class, I prefer to (indicate your level of agreement):			
Q4a	ONLINE1	Read online rather than from a textbook.	1 = Strongly Disagree
Q4b	ONLINE 2	Read online rather than listen to an audiotape of it.	2 = Disagree
Q4c	ONLINE 3	Read online rather than watch a video of it.	3 = Neither Agree nor Disagree
Q4d	OFFLINE1	Read from a textbook rather than listen to an audiotape of it.	4 = Agree 5 = Strongly Agree
Q4e	OFFLINE 2	Read from a textbook rather than watch a video of it.	6 = Do Not Know/Does Not Apply
Q4f	OFFLINE 3	Listen to an audiotape rather than watch a video of it.	
Indicate your level of agreement:			
Q5a	CUSTOMIZE	I like to customize online course sites such as choosing my own fonts, colors, and backgrounds.	1 = Strongly Disagree 2 = Disagree 3 = Neither Agree nor Disagree
Q5b	CONSISTENT	Online courses should have a consistent appearance.	4 = Agree 5 = Strongly Agree 6 = Do Not Know/Does Not Apply
I like online information to be organized as (choose one):			
Q6	NAVIGATION	1. One long page that allows me scroll up and down to read 2. Hyperlinks that allow me to click on selected topics that I wish to read 3. Forward and backward buttons that allow me to read information sequentially in manageable segments	1 = Scrolling 2 = Hyperlinks 3 = Buttons
Indicate your level of agreement:			
Q7a	VIRTUAL1	It's easier for me to get to know people in a virtual classroom than it is in a traditional classroom course.	1 = Strongly Disagree 2 = Disagree
Q7b	VIRTUAL2	I like introducing myself in a virtual classroom.	3 = Neither Agree nor Disagree
Q7c	VIRTUAL3	I like getting to know other students in a virtual classroom.	4 = Agree
Q7d	VIRTUAL4	I like making friends in a virtual classroom.	5 = Strongly Agree 6 = Do Not Know/Does Not Apply

Item #	Name	Label	Response Values and Labels
Indicate your level of agreement:			
Q8a	ENVIRON1	I prefer to learn via an online course rather than in a traditional classroom course.	1 = Strongly Disagree
Q8b	ENVIRON2	Online courses are easier academically than traditional classroom courses.	2 = Disagree 3 = Neither Agree nor Disagree
Q8c	ENVIRON3	I learn as much in an online course as I do a traditional classroom course.	4 = Agree 5 = Strongly Agree
Q8d	ENVIRON4	I prefer to take an online course rather than a traditional classroom course.	6 = Do Not Know/Does Not Apply
Indicate your level of agreement:			
Q9a	SELFEFF1	I can easily navigate my online course sites to find information I need.	1 = Strongly Disagree
Q9b	SELFEFF2	I can easily conduct research online to find information that is not available on my course sites.	2 = Disagree 3 = Neither Agree nor Disagree 4 = Agree
Q9c	SELFEFF3	I can easily use online course technologies to learn.	5 = Strongly Agree 6 = Do Not Know/Does Not Apply
Q10	AGE	What is your age as of your last birthday?	1 = < 18 2 = 18 – 25 3 = 26 – 42 4 = 43 – 61 5 = > 62
Q11	GENDER	What is your gender?	1 = Female 2 = Male

Item #	Name	Label	Response Values and Labels
Q12	ASTUDY	What is your area of study? (choose one) Art/Design/Fashion, Aviation, Business Communication, Criminal Justice, Culinary Education/Human Services, Health Care, Massage/Spa/Wellness Science, Technology, Trade Other (Please Specify):	1 = Art/Design/Fashion 2 = Aviation 3 = Business 4 = Communication 5 = Criminal Justice 6 = Culinary 7 = Education/Human Services 8 = Health Care 9 = Massage/Spa/Wellness 10 = Science 11 = Technology 12 = Trade Other (Please Specify):
Q13	EXPERIENCE	How many online courses total have you taken at a community college?	1 = 0 2 = 1 – 5 3 = 6 – 10 4 = More than 10
Q14	COMMENTS	Is there anything else you would like us to know about your online learning preferences?	

Factor	Name	Item #	Survey Item (Likert's Scale 1 = Strongly Disagree to 5 = Strongly Agree)
Individual Learning Preferences (INDIV)	INDIV1	Q1a	Knowing at the beginning of the semester what assignments are required.
	INDIV2	Q1b	Knowing at the beginning of the semester when assignments are due.
	INDIV3	Q1c	Working on my own rather than in a group.
	INDIV4	Q1d	Working at my own pace.
	INDIV5	Q1e	Making decisions about learning content.
	INDIV6	Q1f	Making decisions about how I learn.
	INDIV7	Q1g	I like to customize online course sites such as choosing my own fonts, colors, and backgrounds.
Interactive Learning Preferences (INTERACT)	INTERACT1	Q2a	I like participating in online discussions.
	INTERACT2	Q2b	I like writing blogs.
	INTERACT3	Q2c	I like reading what other students post on discussion boards and blogs.
	INTERACT4	Q2d	I like participating in online activities with other students because it helps me learn.
	INTERACT5	Q2e	If I have to do a group project, I prefer to select my teammates rather than being assigned to a group.
	INTERACT6	Q2f	I like to use email to communicate with my instructor.
	INTERACT7	Q2g	I like to use email to communicate with classmates.
Virtual Classroom Preferences (VIRTUAL)	VIRTUAL1	Q3a	It's easier for me to get to know people in a virtual classroom than it is in a traditional classroom course.
	VIRTUAL2	Q3b	I like introducing myself in a virtual classroom.
	VIRTUAL3	Q3c	I like getting to know other students in a virtual classroom.
	VIRTUAL4	Q3d	I like making friends in a virtual classroom.

Factor	Name	Item #	Survey Item (Likert's Scale 1 = Strongly Disagree to 5 = Strongly Agree)
Environmental Preferences (ENVIRON)	ENVIRON1	Q4a	I prefer to learn via an online course rather than in a traditional classroom course.
	ENVIRON2	Q4b	Online courses are easier academically than traditional classroom courses.
	ENVIRON3	Q4c	I learn as much in an online course as I do a traditional classroom course.
	ENVIRON4	Q4d	I prefer to take an online course rather than a traditional classroom course.
	ENVIRON5	Q4e	I enjoy taking online courses.
Online Self-Efficacy (SELFEFF)	SELFEFF1	Q5a	I can easily navigate my online course sites to find information I need.
	SELFEFF2	Q5b	I can easily conduct research online to find information that is not available on my course sites.
	SELFEFF3	Q5c	I can easily use online course technologies to learn.
	SELFEFF4	Q5d	I remain calm when computer problems arise while participating in an online course.
	SELFEFF5	Q5d	I have the technical ability to take online courses.

Demographic Questions

Item #	Name	Label	Response Values and Labels
Q6	AGE	What is your age as of your last birthday?	Respondent enters numeric value
Q7	GENDER	What is your gender?	1 = Female 2 = Male

Item #	Name	Label	Response Values and Labels
Q8	ASTUDY	What is your area of study? (choose one) • Humanities • Social/Behavioral Sciences • Mathematics and Science • Computer/Information Science • Engineering • Education • Business/Management • Health • Vocational/Technical • Other (Please Specify)	1 = Humanities 2 = Social/Behavioral Sciences 3 = Mathematics and Science 4 = Computer/Information Science 5= Engineering 6= Education 7= Business/Management 8= Health 9= Vocational/Technical Other (Please Specify)
Q9	EXPERIENCE	How many online courses total have you taken at a community college?	1 = 1 2 = 2 3 = 3 4 = 4 5=5 6=6 7=7 8=8 9=9 10=More than 10

APPENDIX E: APPROVAL LETTER

PO Box 35009, Charlotte, NC 28235

July 15, 2009

Institutional Review Board
University of North Carolina at Charlotte
312 Cameron Applied Research
Research & Federal Relations
Charlotte, NC 28223-0001

This letter is being written to confirm that the research project being proposed by Maria Lander is supported by xxxx. Her research will be collected from a random selection of students enrolled in online classes at xxx in the Spring term 2009.

All data being used in Ms. Lander's proposed study will be collected from students on a voluntary participation basis. Names and personal information will be kept confidential. All analysis will be done anonymously and reported with no individual identifiers.

She has the permission and support of the college in the use of these data for her dissertation research project.

Please contact me if you have further questions.

Sincerely,

Terri M. Manning

Terri M. Manning, Ed.D.
Associate Vice President for Institutional Research

APPENDIX F: FIRST REMINDER EMAIL

Dear *Student's First Name*:

Last week, you received an invitation to participate in a study to determine if there are differences among community college students enrolled in online courses relative to their preference and use of instructional strategies. If you have not taken the survey yet, please click the link below to complete the survey. It only takes 5 minutes. Your feedback is important and it may help improve the online learning experience for online students.

http://FreeOnlineSurveys.com/rendersurvey.asp?sid=oam50fzwmdzlizj555018

Clicking on the link above indicates that you have read this post and voluntarily agree to participate in this study. There is no cost and no risk to participate. Your responses are anonymous and confidential. You will not be personally identified in any reports that are generated as a result of participation.

This study is part of a doctoral dissertation at the University of North Carolina at Charlotte. If you have questions concerning the study, contact the investigators, Ms. Maria Lander at lander.research@gmail.com or Dr. John Gretes at jagretes@uncc.edu.

If you have any concerns or questions about your treatment as a subject in this project, contact Dr. Terri Manning, CPCC Planning and Research, P.O. Box 35009, Charlotte, NC 28235 (704) 330-6597 and UNC Charlotte Research Compliance Office at (704) 687-3309.

Thanks,

Maria Lander

APPENDIX G: SECOND REMINDER EMAIL

Dear *Student's First Name*:

This is your last chance to participate in a study to determine if there are differences among community college students enrolled in online courses. If you have not taken the survey yet, please **click the link below to complete the survey**. It only takes 5 minutes. Your feedback is important and it may help improve the online learning experience for online students. ***If you have taken the survey, THANK YOU!***

Survey Link:
http://FreeOnlineSurveys.com/rendersurvey.asp?sid=oam50fzwmdzlizj555018

Clicking on the link above indicates that you have read this post and voluntarily agree to participate in this study. There is no cost and no risk to participate. Your responses are anonymous and confidential. You will not be personally identified in any reports that are generated as a result of participation.

This study is part of a doctoral dissertation at the University of North Carolina at Charlotte. If you have questions concerning the study, contact the investigators, Ms. Maria Lander at lander.research@gmail.com or Dr. John Gretes at jagretes@uncc.edu. If you have any concerns or questions about your treatment as a subject in this project, contact Dr. Terri Manning, CPCC Planning and Research, P.O. Box 35009, Charlotte, NC 28235 (704) 330-6597 and UNC Charlotte Research Compliance Office at (704) 687-3309.

Thanks,

Maria Lander